August 1956

RAILWAY TRACK and STRUCTURES

One of Five Specialized Railway Age Publications

Maintenance men have the foresight to keep track in good shape by using millions upon millions of tremendously powerful spring washers to absorb shocks and strains, to equalize bolt tensions, and to protect rail ends and joints.

IMPROVED HIPOWERS
IMPROVE TRACK

THE NATIONAL LOCK WASHER COMPANY, NEWARK 5, N. J., U. S. A.

A COMPLETE LINE OF RAILWAY SPRING WASHERS

Introducing

The Kershaw BALLAST CLEANER

Cleans Shoulder Ballast In One Pass Without Work Train

Front view showing shoulder ballast being picked up, cleaned and returned to shoulder. Note machine working both sides of track.

Kershaw Manufacturing Company proudly introduces the Kershaw Ballast Cleaner for spot cleaning of shoulder ballast without the use of work trains.

The machine will clean shoulder ballast in one pass, and at a rate of 1,200 feet-per-hour. It is provided with a set-off to allow trains to pass and is ideal for cleaning ballast in spots on your track. The machine also will scarify and regulate the shoulder between spots which need cleaning.

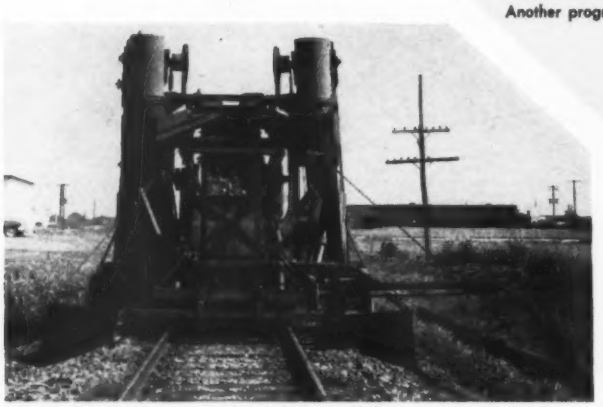
Kershaw's Ballast Cleaner is equipped with regulator wings and scarifying teeth. Shoulder ballast is picked up, screened to remove dirt and foreign material, and placed back on the track, either on the shoulder or in the track center as desired. The regulator wings then shape the ballast shoulder back to the desired section.

For a free test demonstration on YOUR railroad operating under YOUR ballast cleaning conditions, write Kershaw Manufacturing Company or contact one of Kershaw's sales representatives.

Another progressive step by Kershaw!

ATTEND
AREA AND BUILDING
AND
TRACK SUPPLY
ASSOCIATIONS
COMBINED EXHIBITS
CHICAGO, ILLINOIS
MARCH 19-20-21-22

VISIT OUR BOOTHS
215 THROUGH 285



Rear view showing vibrating screen cleaning ballast and ballast wing dressing cleaned ballast shoulder. Dirt removed from ballast is discharged on shoulder by conveyor belt.

Now... More Than Ever... Recognize This Symbol of Leadership...

KERSHAW
MANUFACTURING CO. INC
MONTGOMERY ALABAMA

Why not protect your switch points too?

Switch points are a major expense, as track materials go. And they take an awful beating, even in yard and siding switches. Wouldn't it make sense to protect your switch points just as you do your frogs?

Here is the low-cost, foolproof tool that's ready and able to do the trick. It is the Bethlehem Switch Point Guard Rail, four-feet-nine-inches of heat-treated toughness specifically designed to take the pounding away from the points (and stock rails, too!).

As you can see, the Switch Point Guard Rail stands higher than either stock rail or point, to shove wheels clear so they can't do any damage. This provides derailment protection, too, against sharp flanges and worn points. Beveled ends ease the passage of the wheels through the switch, softening the shock to car and lading.

This hefty little guard is bolted firmly to the slide plates and braced against lateral thrust. It is reversible for use on either left- or right-hand side of the track. One of our representatives can quickly give you facts and figures to show how soon this switch-point saver pays for itself. A call or note to our nearest office will bring him to any point you say.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

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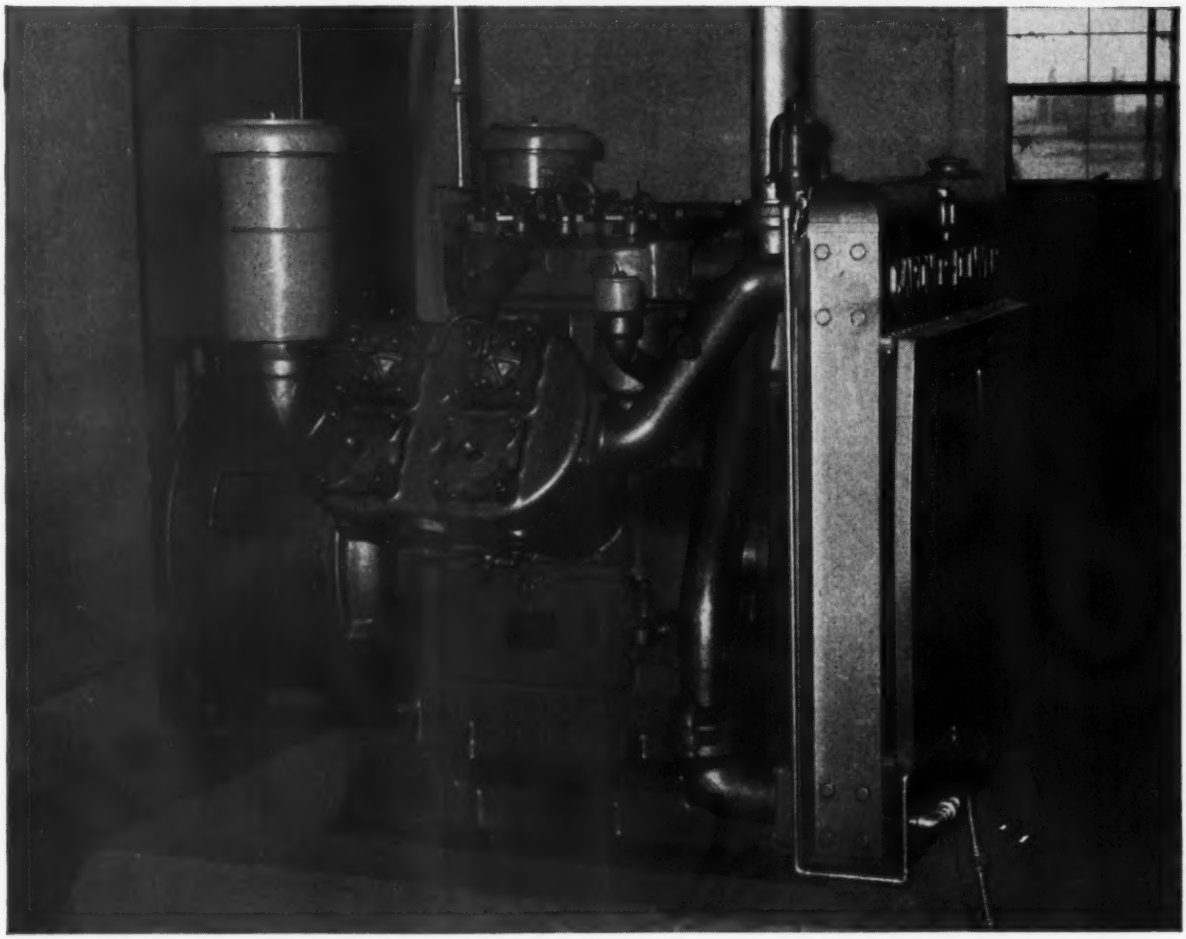
Gardner Denver . . . Serving the World's Basic Industries



Moves in fast . . . starts right away . . .
Gardner-Denver WB Compressor

It's as easy as it looks in this picture to install a Gardner-Denver WB Compressor. Hook up the wiring . . . air line . . . controls—that's about all there is to it. Not much of a foundation is needed—because vibration has been designed out of the machine. The packaged unit has a built-in motor, and a self-contained radiator-intercooler that solves cooling-water problems.

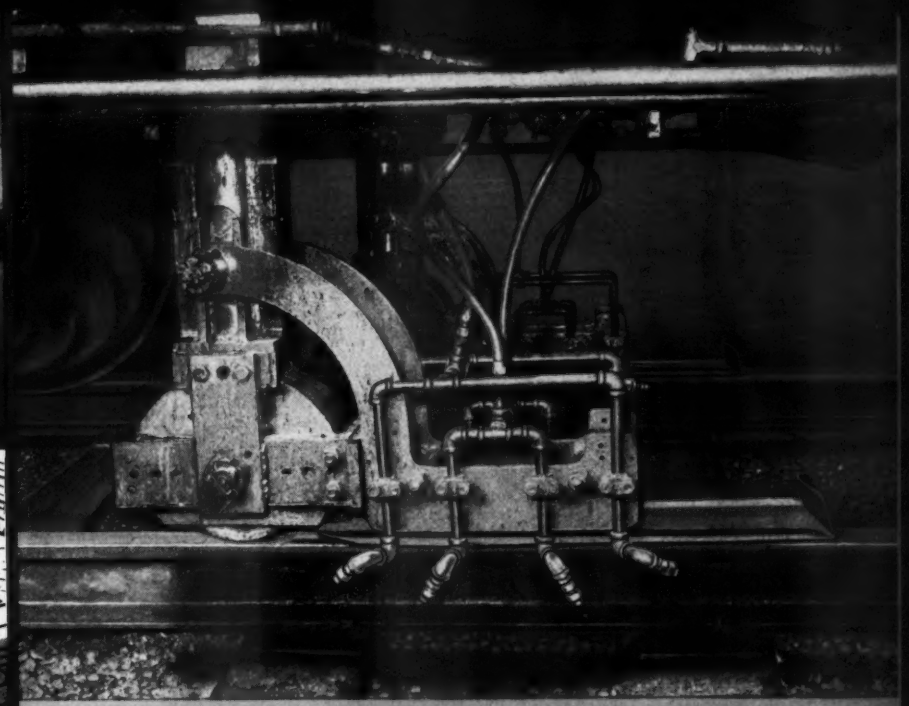
Available in seven sizes from 142 to 686 cfm. Write for Bulletin WB-10, with full specifications.

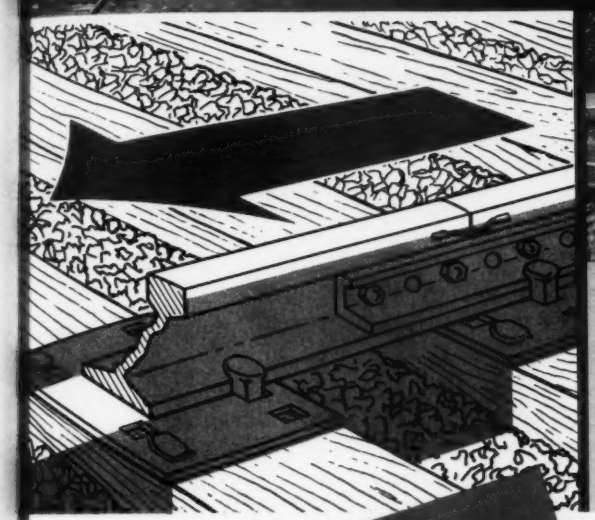
Another popular Gardner-Denver compressor—noted for long, steady runs—the model AA. Bulletin AA6.

GARDNER - DENVER

THE QUALITY LEADER IN COMPRESSORS, PUMPS, ROCK DRILLS AND AIR TOOLS FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario





● (Top) *Nalcote* Spray Cars operate at front of work train, with expert crew in charge. You furnish only the work train and crew.

● (Left) Arrow shows direction of *Nalcote* Spray Car travel. Coverage of both receding and approaching surfaces is complete.

● (Above) Unique control devices assure complete, uniform *Nalcote* coverage regardless of variations in gauge and elevation. Shield protects running surface of rail.

Nalcote SERVICE

Nalcote is the superior asphalt-base coating that really protects against corrosion.

●

Nalcote Spray Cars cover up to 140 miles per day.

●

Uniform spray pattern . . . from mid-point of outer edge of rail head to outer edge of tie plate.

STOPS CORROSION of RAIL and FASTENINGS

Here is how you can gain real protection for the large investment your road has in rail and rail fastenings. Schedule now for the fast, efficient—and economical *Nalcote* anti-corrosion treatment!

Aboard *Nalcote* Spray Cars equipped with precision spray machines, experienced operators spread the tough, long-lasting *Nalcote* on rail, tie plates, spikes, bolt heads, angle bars and anchors.

All this at a cost that varies little from the cost of manually painting angle bars alone.

If you would like further information—and an early application date, call your Nalco Representative or write direct.

NATIONAL ALUMINATE CORPORATION
SPRAY SERVICES DEPARTMENT

6196 West 66th Place
Chicago 38, Illinois

P.O. Box 5444
Huntington, West Virginia

In Canada: Alchem Limited, Burlington, Ontario

ANOTHER *Nalco*® **SERVICE . Serving Railroads through Practical Applied Science**

Year after year, mile after mile conventional rail is being replaced by trouble-free, continuous rail.

Longer rail life at LESS COST WITH "RIBBONRAIL" SERVICE

Leading railroads throughout the nation are eliminating the expense of assembling and maintaining rail joints. Here are some of the savings now possible with LINDE'S RIBBONRAIL SERVICE.

1. Reduces Overall Maintenance. There are no angle bars, bolts, nutlocks, and copper bonds to install or replace. Maintenance on rolling stock is less too. Wear and tear on motor housings, car wheels, axles, and bearings is substantially cut down.

2. Increases Track Life. The smooth continuous bond does away with battered rail ends . . . and trouble from loose, out-of-line, or worn rail joints is eliminated.

3. Improves Rail Riding Quality. By reducing the operating vibration, continuous rail decreases spillage, and vastly improves riding comfort.

LOOK TO "LINDE" . . . the leader in continuous rail welding, and plan your RIBBONRAIL SERVICE program now. Call or write the Railroad Department of LINDE AIR PRODUCTS COMPANY.

RAILROAD DEPARTMENT

Linde Air Products Company

A Division of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York 17, N. Y.

Offices in Other Principal Cities

In Canada: LINDE AIR PRODUCTS COMPANY

Division of Union Carbide Canada Limited, Toronto

The terms "Linde" and "Oxweld" are trade-marks, and "Ribbonrail" is a service-mark of Union Carbide and Carbon Corporation.

Supplying to railroads the complete line of welding and cutting materials and modern methods furnished for over forty years under the familiar symbol - - -

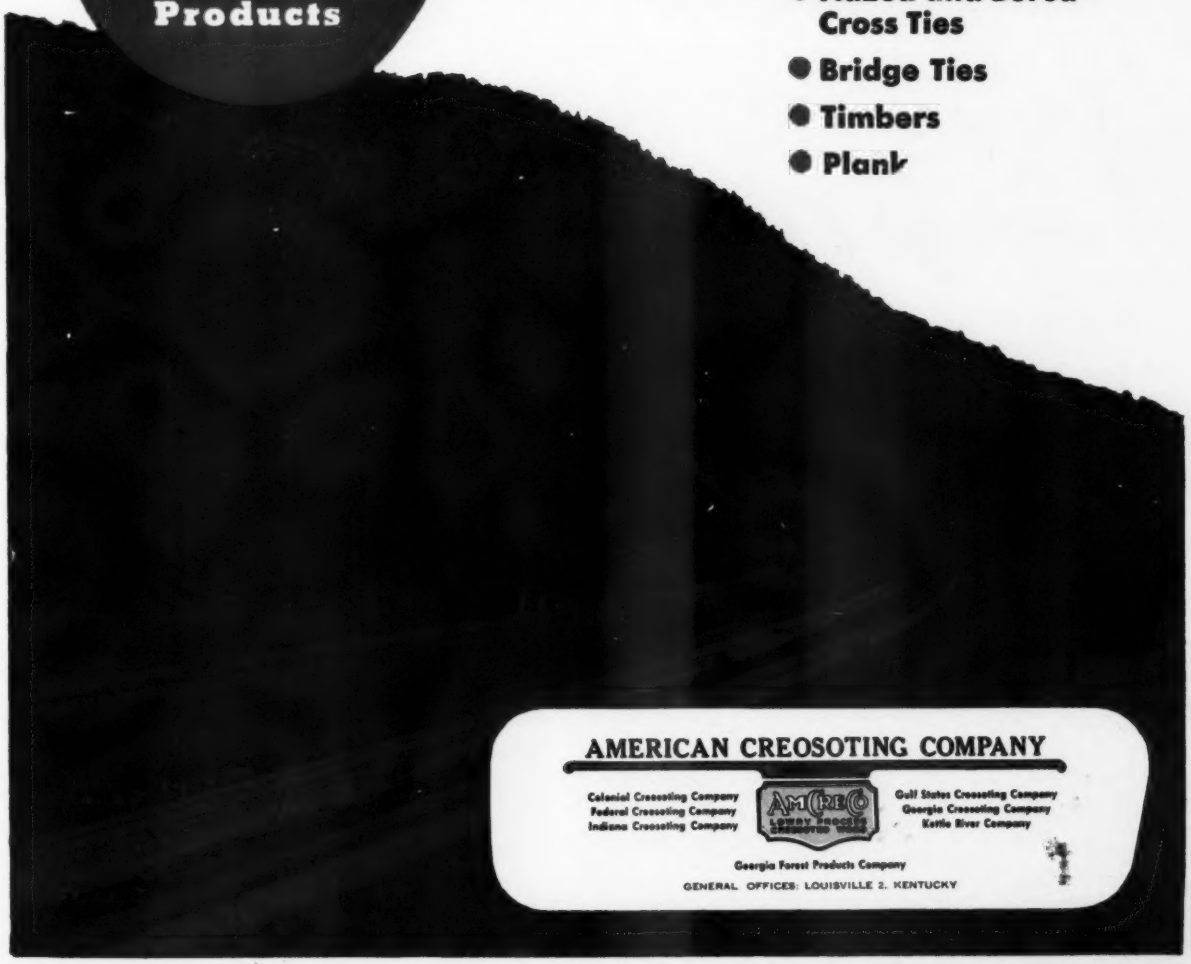
AMCRECO
PRESSURE TREATMENT means Longer Service Life Reduced Maintenance Costs

In Amcreco cross ties, bridge timbers and piles, Lowry Process Pressure Treatment makes the big difference. The natural strength of the wood is preserved to assure long dependable service.

That's why Amcreco Products stand up for extra years under the ever increasing pounding of high speed rail traffic — have increased resistance to the effects of climate, insects and fungi. For lower overall costs and reduced maintenance, it will pay you to specify Amcreco next time.

Amcreco
Lowry Process
Creosoted Products

- **Adzed and Bored Cross Ties**
- **Bridge Ties**
- **Timbers**
- **Plank**



AMERICAN CREOSOTING COMPANY

Colonial Creosoting Company
Federal Creosoting Company
Indiana Creosoting Company

AMCRECO LOWRY PROCESS CREOSOTED WOOD

Gulf States Creosoting Company
Georgia Creosoting Company
Kettle River Company

Georgia Forest Products Company

GENERAL OFFICES: LOUISVILLE 2, KENTUCKY

"New Bonus-Powered International

give work-speeding capacity..new

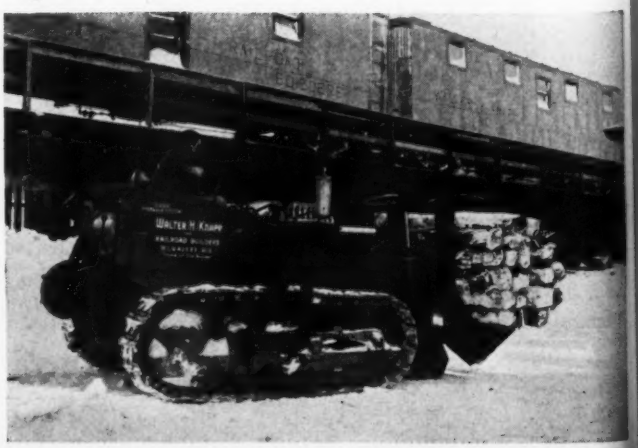
Over 132,000 cubic yards of hard, dry clay to move —cuts as deep as 35 feet to excavate—fills that run from 25 to 40 feet deep—on this tough job near Sioux City, Iowa. Two new International 55 Payscrapers, push-loaded by TD-18 crawler, replaced two crawler-scraper units here on short-haul cut-and-fill work, with these big results:

"The two new 55 Payscrapers have jumped our daily yardage 1500 yards—*80% or better*—compared to crawler-scraper units replaced," reports Owner William C. Grady, LeMars, Iowa.

"The new 55's have proved that even on very short hauls, their rubber-tired speed pays off. Now, our same manpower

"Years of excellent performance from our International crawler fleet, backed by fine service, helped our company grow to a fleet of 11 International crawlers," states Nor-Vel Construction Co., Ferguson, Mo. Here's two of their TD-24's, helping move wet clay on a large Black Jack, Mo., job.

Walter H. Knapp, Inc., Milwaukee, Wisconsin, railroad contractor makes fast, low-cost work of tie-handling—even in tough, snowy conditions—with an International Drott TD-9 equipped with Skid-Grapple. Exclusive top grab arm gives positive load control!



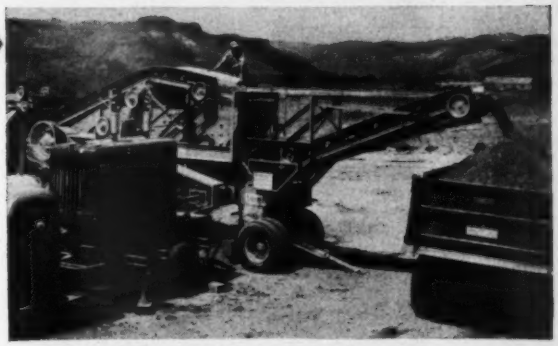
"Short-haul yardage soars"

outfits . . . . *operating ease"*

moves practically double our former yardage. Loading averages 42 seconds in dry, hard-packed clay. Easy operation and plenty of power make new Payscrapers the operators' favorites."

See you at the ROAD SHOW—CHICAGO Jan. 27 to Feb. 4, 1957

"I can rip up concrete with pry-action breakout—without strain on the crawler," declares J. E. Johnson, Knoxville, Tenn., of his new bonus-powered TD-9 Drott Skid-Shovel. "Best grading loader I've operated. Has no-strain steering, fine job vision."



"No busy season downtime," says Ralph Jordan, crusher superintendent, Asphalt Paving Company, Wheatridge, Colorado—of International Power Unit performance. "I prefer them—they're easiest to maintain." A Model U-450 powers their Barber-Greene hot-mix plant; another unit crushes 1,500 tons of gravel daily; a TD-18 dozer controls stockpiles.

A railroad that skirts the Atlantic coast owns this International TD-9 crawler—shown grading an 8-mile embankment with Bullgrader for track-extension construction near Sanderson, Florida. Outfit was also used for stump-removal on new right-of-way.

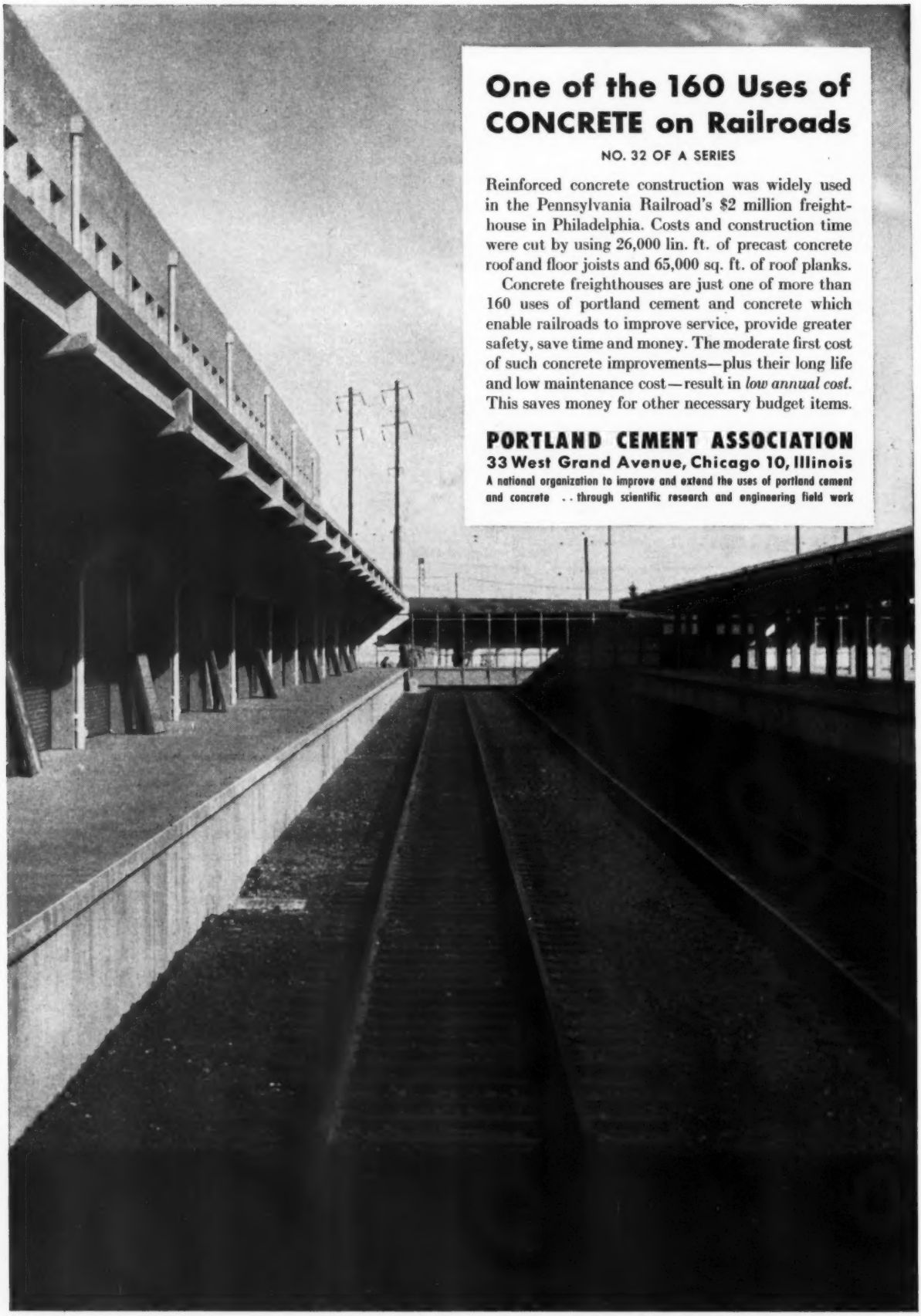
Prove bonus-powered International equipment performance for reducing grades, removing landslides, daylighting curves, handling ties, loading ballast, building spur lines—for all kinds of off-track duties. See your nearby International Construction Equipment distributor for a demonstration.

INTERNATIONAL HARVESTER

INTERNATIONAL® Construction Equipment

International Harvester Company, 180 N. Michigan Avenue, Chicago 1, Ill.

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Line Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . . Motor Trucks



One of the 160 Uses of CONCRETE on Railroads

NO. 32 OF A SERIES

Reinforced concrete construction was widely used in the Pennsylvania Railroad's $2 million freighthouse in Philadelphia. Costs and construction time were cut by using 26,000 lin. ft. of precast concrete roof and floor joists and 65,000 sq. ft. of roof planks.

Concrete freighthouses are just one of more than 160 uses of portland cement and concrete which enable railroads to improve service, provide greater safety, save time and money. The moderate first cost of such concrete improvements—plus their long life and low maintenance cost—result in *low annual cost.* This saves money for other necessary budget items.

PORTLAND CEMENT ASSOCIATION
33 West Grand Avenue, Chicago 10, Illinois
A national organization to improve and extend the uses of portland cement and concrete . . through scientific research and engineering field work

AT VARIOUS POINTS ALONG THE LINE GREAT NORTHERN USES BUCYRUS-ERIE CRANES and EXCAVATORS

• Building a bridge at West Minneapolis is a Bucyrus-Erie 15-B Transit Crane. This machine was added to the Great Northern's fleet of off-track work equipment early in 1954.

Like many of America's most famous railroads, the Great Northern uses Bucyrus-Erie cranes and excavators for material handling and dirt-moving assignments. At key spots all along the 8,285-mile line Bucyrus-Erie ¾-yd. 22-B crawler-mounted machines and 15-B Transit Crane can be found playing an important role in the railroad's maintenance-of-way and construction programs.

Bucyrus-Erie machines are quickly convertible from one front end to another, making them versatile enough to handle almost any type of maintenance or roadway construction job. In addition, Individual Design of every model in the Bucyrus-Erie line matches front ends to each machine's rated capacity to insure efficient performance.

Why not do as many other railroads have done — lay plans now for adding Bucyrus-Eries to your maintenance-of-way and construction equipment. Eight crawler-mounted models to choose from — capacity ⅜- to 4-cu. yds. Transit Cranes (motor truck mounted) with 15- and 25-ton rated capacity are available also — readily converted to ½- and ¾-yd. excavator operation. 282E56C

Bucyrus-Erie Company • SOUTH MILWAUKEE WISCONSIN

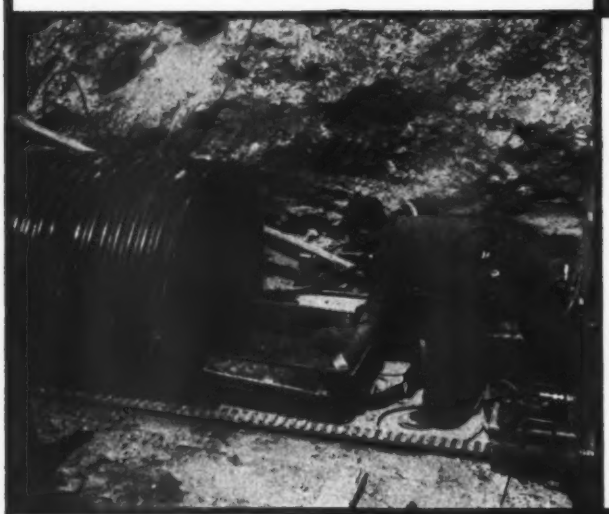
BUCYRUS ERIE

Three Easy Armco Methods Provide Undertrack Openings Without Disturbing Track or Traffic

Installing a new underpass, drainage structure or conduit doesn't have to mean "open cutting." You can choose one of these three Armco Methods to do the job safely and quickly without disturbing track and other expensive surface installations.

Tunneling with Armco Liner Plate

Here a workman bolts up a section of Armco Liner Plate as part of a 40-foot-long tunneling operation under the Missouri Pacific Lines near Corpus Christi, Texas. Tunneling keeps the work out of the way of traffic. And there is a minimum danger of settlement after the job is completed. Liner Plate is available in diameters from 48 inches up.



Jacking Armco Pipe

Jacking is frequently the answer to the problem of making an opening under existing facilities in the size range from 30 to 72 inches. The Armco Pipe is "pushed" through the earth with specially developed jacking equipment. Jacking is one of the specialized services of the Armco Construction Department.

The Boring-Jacking Method

Boring-Jacking is the ideal method for placing small diameter conduits under the track. A hole is automatically bored and cased at the same time. Earth is removed by the boring device as the casing is advanced. This is another specially developed Armco service. Range of casing diameters is from 10¾" to 30".

Write us for complete data. Armco Drainage & Metal Products, Inc., 5616 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO®

Picture courtesy of N.Y.N.H. & H.R.R.Co.

BIRD SELF-SEALING TIE PAD AFTER 5 YEARS SERVICE is removed for inspection. Pad had to be pried from tie owing to tenacious seal that is characteristic of all Bird Tie Pads. Reapplied, and becoming resealed after inspection, the Bird Tie Pad is good for many additional years of protective service.

Slash your tie costs 50% with BIRD Self-Sealing TIE PADS

FACTS YOU SHOULD KNOW ABOUT BIRD TIE PADS

It is common knowledge that moisture and abrasive materials destroy the supporting power of the wood under the tie plates and the holding power of the spike wood.

The Bird Self-Sealing Tie Pad was specifically developed to combat these destructive agents. *For that reason, it is entirely different in design, construction and function from any other tie pad on the market.*

This difference lies in the ability of the Bird tie pad to maintain dimensional stability. It cannot stretch or compress under passing wheel loads . . . so that it provides a constant, unbroken seal.

The Bird Self-Sealing Tie Pad completely and permanently seals out moisture and abrasives . . . the *causes* of decay under the plates . . . and, in addition to this, it prevents mechanical wear by acting as a buffer between the tie plate and the tie.

As specialists in the scientific preservation of wood for much of our 161 years in business, we are qualified to help you extend the service of your ties in track.

WHERE

- On the joint and shoulder ties of insulated joints.
- On new or older bridge decks.
- On switch timbers.
- Under crossing frogs.
- Through highway grade crossings and station platforms.
- On curves to insure holding track to gauge and surface.
- With smaller tie plates.
- Out-of-face with new or relayer rail.
- On pile cut-offs.

RESULTS

- You get 50% extra life from new ties.
- You get twice the normal remaining life expectancy from old ties that can be adzed to a smooth surface of sound wood.
- You save on gauge, line and surface maintenance costs in addition to savings on tie life.

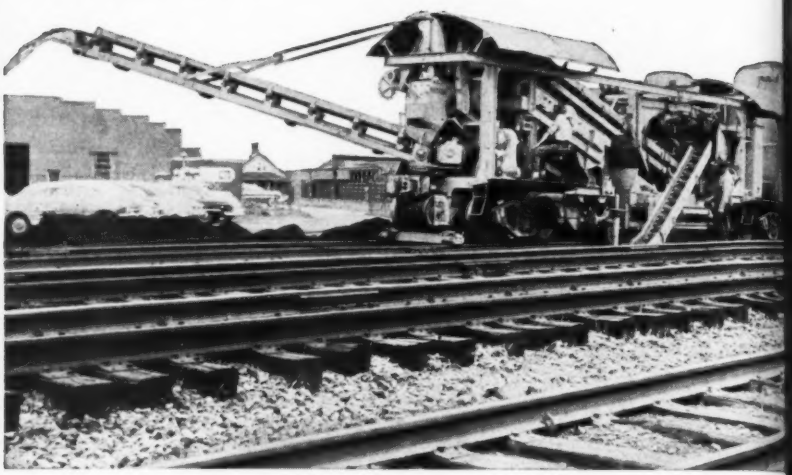
WHEN

You start saving as soon as you start using Bird Self-Sealing Tie Pads. Bird's is the original self-sealing tie pad . . . proven by years of in-track service. Write for further information, today . . . Bird Tie Pads, Dept. HTS-8, East Walpole, Massachusetts.

BUY THE BEST BIRD & SON, inc. Established 1795 **BUY BIRD**

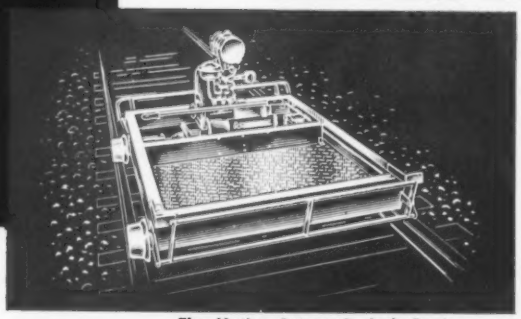
Matisa

BALLAST CLEANER CLEANS ALL BALLAST IN ONE OPERATION

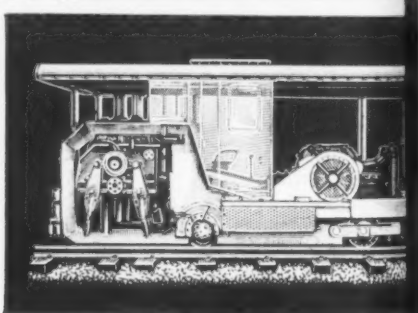


- Cleans Cribs, Shoulders, Intertrack Space and *Under the Ties*
- Provides Roadbed Resilience
- Increases Life of Good Drainage
- *SAVES* Ballast Money
- LOWERS TRACKS:
  In Tunnels
  Under Overhead Bridges
  Between Grade Crossings
  From Bridge to Bridge

OTHER MATISA TRACK MAINTENANCE MACHINES

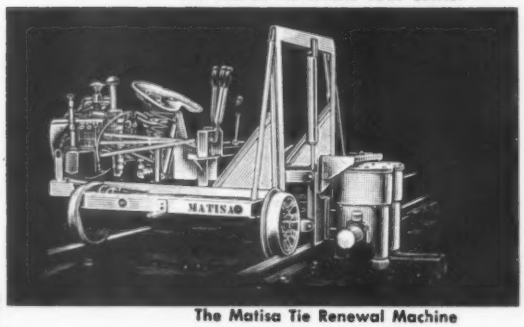


The Matisa Automatic Jack Carrier

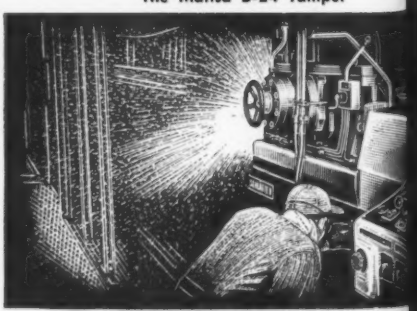


The Matisa B-24 Tamper

For detailed information on the Matisa Ballast Cleaner see page 175 of the 8th edition of the Railway Track & Structures Cyclopedia—or send for literature on this or other Matisa machines.



The Matisa Tie Renewal Machine



The Matisa Electric Flash Rail Welder

Matisa

EQUIPMENT CORPORATION

1020 WASHINGTON AVE. • CHICAGO HEIGHTS, ILLINOIS

News Notes

. . . a resumé of current events throughout the railroad world

RAILWAY
TRACK and STRUCTURES
AUGUST, 1956

An increase in mail rates is being sought by 29 eastern roads in an application filed with the ICC. Claiming losses of $25 million in 1955 mail business, they are asking the commission to investigate the situation with a view to fixing rates that will "reflect the full cost" of the service. Meanwhile, western and southern railroads—opposed the Eastern roads' action—voted to make their own cost study and contact the Post Office seeking "reasonable" rate increases. If turned down, they may file a separate petition with the ICC.

•

The famed Cabinet Report bills are dead. The House Committee on Interstate and Foreign Commerce decided to take no action on them during the present Congress. This means that a new start will have to be made in the next Congress. The decision, based upon a recommendation for further study, was precipitated by the subcommittee which held hearings on the proposed legislation —including the railroads' rate-freedom program.

•

Net income of Class I railroads in May was $85 million—down $1 million from May '55. Net railway operating income for the month was up more than $1 million from last year.

•

Permission to lease the Chicago, St. Paul, Minneapolis & Omaha has been asked of the ICC by the North Western. The C&NW, which owns 98 per cent of the road's common and preferred stock and all its bonds, requested the leasing arrangement to effect an operating economy. The CStPM&O has consistently failed to earn its fixed and depreciation charges.

•

For what it may be worth in view of the steel strike the Regional Shippers Advisory Boards have estimated that carloadings in the third quarter of this year will total 8,155,399 cars, an increase of 4.4 per cent above last year's third-quarter total of 7,815,010 cars.

•

A pay hike of 25 cents an hour, to restore their "wage relationship" with workers in other industries, is being sought by 11 non-operating unions. The railroads have countered with a proposal for a 6½-cent wage cut on the premise that last year's 16½-cent settlement, based on Emergency Board findings, went too far.

•

A total of 5,687 railroad fires were reported during 1955—an all-time high amounting to $13,050,970 in losses.

•

The new Transportation Center at Northwestern University will open next fall. John A. Logan, professor of civil engineering at the Northwestern Technological Institute, has been named associate director of the center to supervise educational, research and other operational activities.

•

The Canadian Pacific has proposed the elimination of firemen in freight and yard diesel engines. Countering demands of the Brotherhood of Locomotive Firemen and Enginemen for a 25 per cent wage increase, the road also seeks to reclassify the fireman's position in passenger diesels to that of a semi-skilled "diesel helper."

SEE!
AT THE TRACK
SUPPLY SHOW
Gradall

The Railroad® Gradall with Self-Compensating Guide Wheels

Discuss your m/w problems with us at Booth 24 N

COSTLY MAINTENANCE-OF-WAY work trains can be eliminated entirely when your new Railroad Gradall goes on the job. If track being worked must be cleared for traffic, the Gradall quickly and easily moves off the track onto the shoulder or across to the other track on two-track systems. Less than 5 minutes after trains have passed—Gradall is busily back at work!

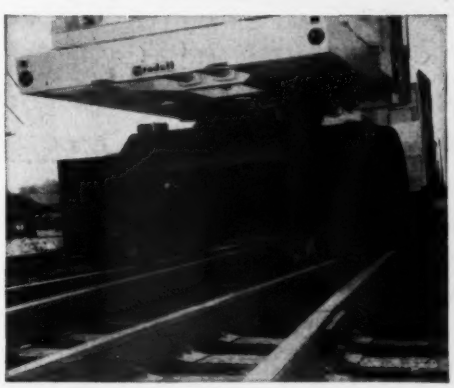
As a new optional feature for one-man operation, the Self-Compensating Guide Wheels are easily aligned for track positioning. Front wheels bear 100 percent of the Gradall's weight which lifts the massive rubber tires clear of all ties. Rear wheels take only 40 percent of the machine's weight, permitting the rear tires enough traction for climbing the steepest grades. Once guide wheels are lowered on the track, they remain in that position. Only when the Gradall leaves the track and moves on its rubber tires, are the wheels raised.

Present owners report their Railroad Gradalls average 6 to 7 on-the-job hours each working day because the machine can stay at the work site overnight—only returning to the yards when the job is finished.

Why not let us arrange for a field demonstration of the new Railroad Gradall on your maintenance-of-way jobs? Write Gradall Division, Warner & Swasey Company, Cleveland 3, Ohio.

® Reg. U. S. Pat. Off.

Both front and back guide wheels are raised and lowered pneumatically by a push-button. They actually cushion the ride, compensating automatically as the rubber tires move up and down when crossing over switches, frogs, etc. Gradall's big tires enable it to easily drive on the highway, track right of way or cross-country. Also, it quickly climbs over rails at any angle to cross over or straddle the track.



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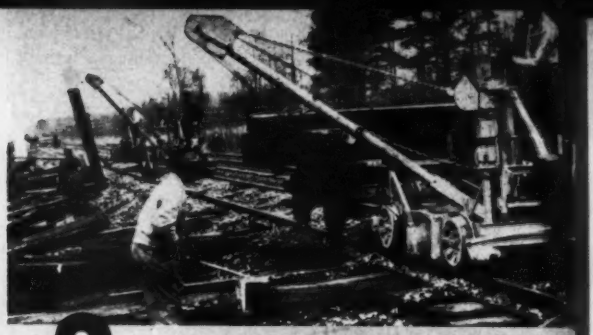

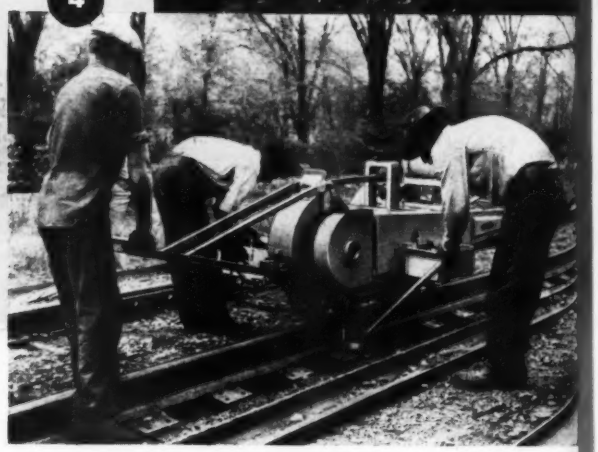

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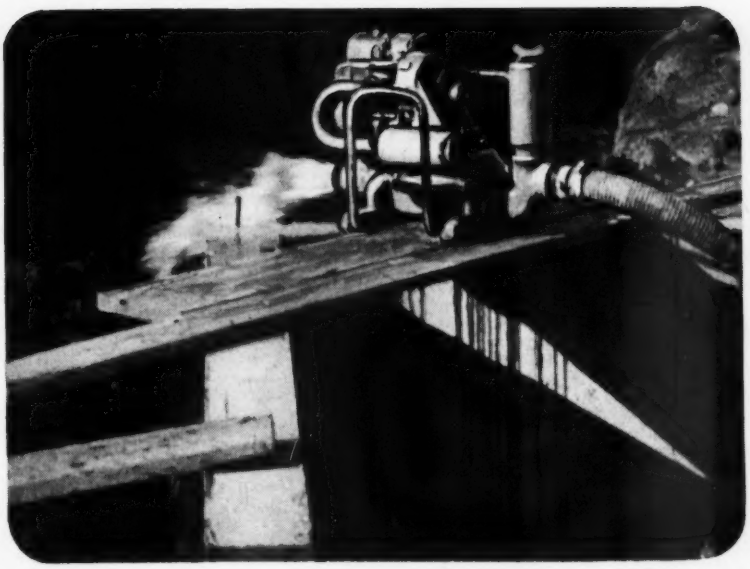

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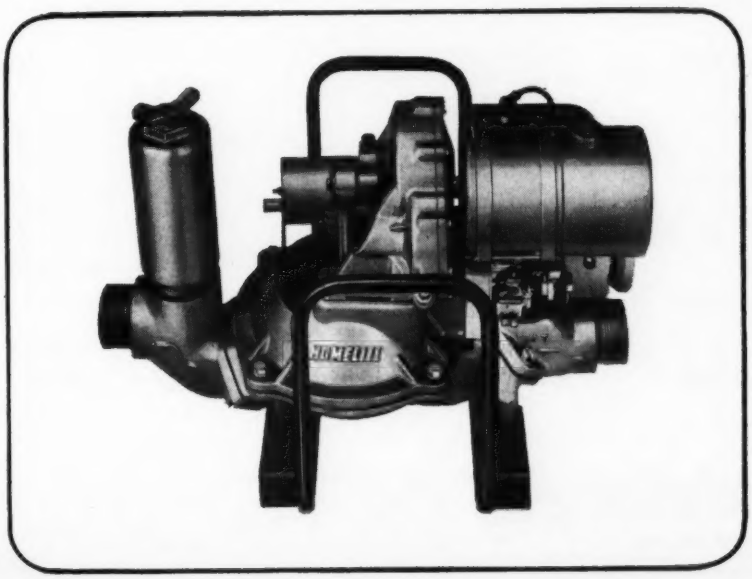

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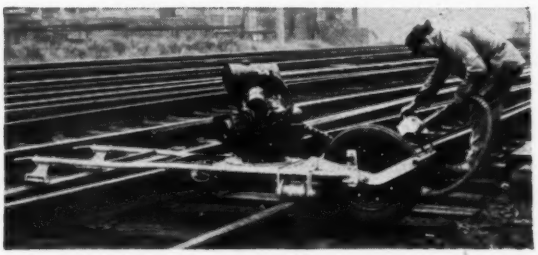

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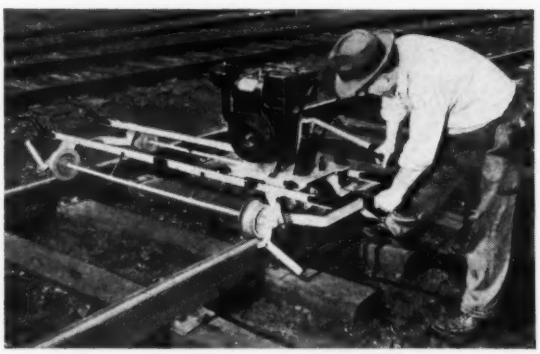

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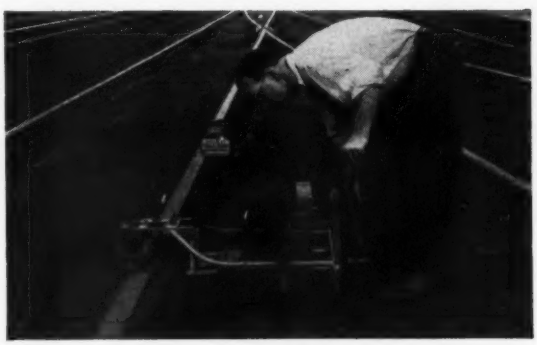

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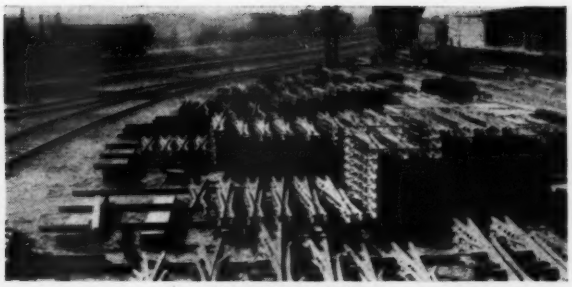

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Signal Equipment

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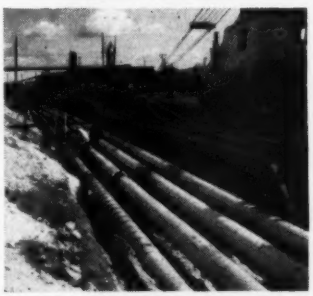
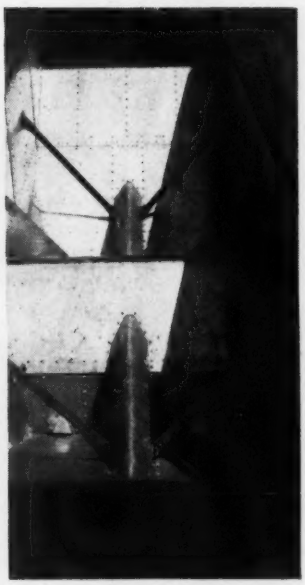


Pipe Protection



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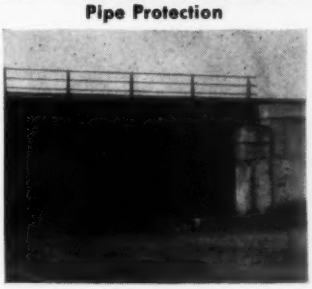

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RAILWAY
TRACK and STRUCTURES

Subject:

Incentives for Supervisors

Dear Readers:

In a recent conversation a top-ranking railway officer put his finger on one of the more perplexing problems facing American industry, including the railroads. For a long time he had been searching for a man with the qualifications and the willingness to fill a very important position. He said his efforts had finally met with success, and he mentioned the name of the man who had agreed to take the job.

It happens that the man selected already had a top-ranking position with a salary commensurate with the responsibilities he was carrying. Acceptance of the new position not only means that he must move to a strange city far away but that his new duties will be extremely arduous and the responsibilities heavy. A man listening to the conversation in which these facts were being recited expressed surprise that anyone so comfortably situated would give up such a position to take a much harder job. This comment brought a mild rebuke from the officer doing the hiring. "If the time comes," he said, "when American industry cannot find men willing to accept the challenge presented by higher positions, it will be in a bad way indeed."

This conversation brings to mind a situation that nearly every railroad supervisory officer has encountered in some form. I refer to the difficulty of getting people to accept positions of responsibility. For example, many roads have complained it is becoming increasingly difficult to find men who are willing to accept the position of foreman. Also, instances are common in which foremen have declined to accept promotions, and so on up the line.

The existence of this problem can be explained in part by the fact that the spread between laborors' and supervisors' pay has narrowed considerably. Theoretically the problem could be solved by readjusting pay scales in such a way that wage differentials will reflect the relative amount of responsibility attached to the various jobs. Doubtless this would be helpful but there is reason to believe that the problem has deeper roots that are not so easily reached.

There was a time when the income of the average non-supervisory worker was such as to provide only a bare living for himself and his family. Now, however, the standard of living of the population as a whole is so high that the non-supervisory worker can afford all the conveniences and many of the luxuries that the economy offers. This means that one of the most important incentives that formerly drove men to aspire to higher positions has been removed. Thus, when a worker is offered a supervisory position, he weighs the relatively minor increase in income (not forgetting the inroads of the income tax) against the greatly increased strain and responsibility of the new job—and frequently decides to stay where he is.

We don't know the answer to this problem, but we do know this: Business, including the railroads, *must* be able to fill positions of responsibility. The problem of filling such jobs, while only annoying now, may reach serious proportions in the future. Procrastination in finding a solution may lead to serious difficulties later on.

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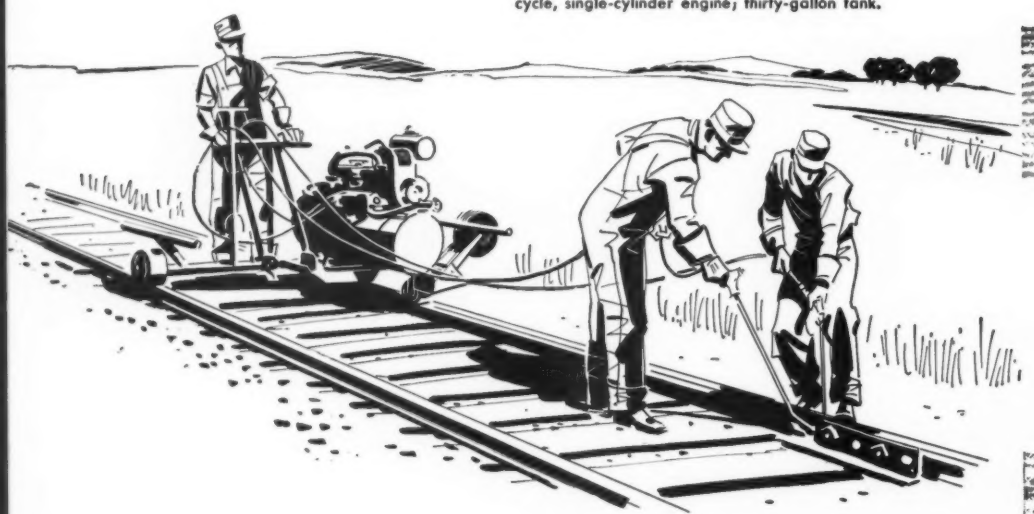

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RAILWAY

TRACK and STRUCTURES

AUGUST, 1956 **Vol. 52, No. 8**

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Associate Editor

A conversation about rail anchor holding power

Recently, we asked a track maintenance man whether he thought rail anchors should have high holding power. He answered something like this:

"Certainly. How else could they keep rail from slipping? The greater the holding power, the better."

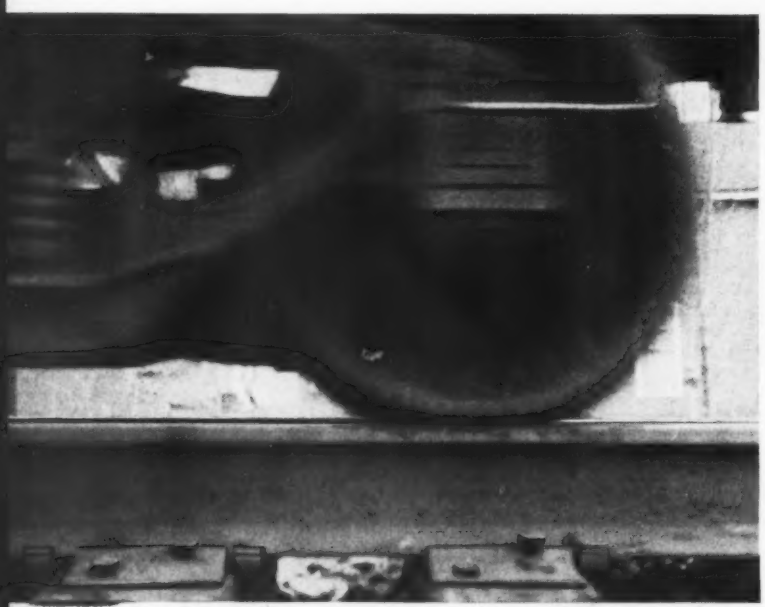
Then we asked about skewed ties and ballast disturbance under anchored rails.

"That's an indication that rail has not been adequately anchored. For normal right-of-way, rail should be anchored at about every other tie. On grades, curves and under heavy traffic, there should be more anchors. Too few anchors place too much load on just a few ties. Result is that the force on each tie exceeds the ballast resistance causing skewing of the ties. If the anchor would be allowed to slip to avoid disturbing the ballast, it would not be performing its function—that of gripping the rail. Where there are skewed ties, then, it is necessary to add more anchors. This divides the load over a greater number of ties, avoids ballast disturbance, and holds rail properly in position.

"Where ballast collects moisture and freezes solid in winter, the ballast has no resilience. This puts extra stress on both the anchor and tie. Unless there is adequate tie-bearing surface, the anchor will cut excessively into the tie, causing accelerated damage."

We agree with this maintenance man. Adequate anchorage, high holding power and large tie-bearing anchor surface are essential to satisfactory, long-lasting and low-cost rail anchorage. True Temper Corporation, Railway Appliances Division, 1623 Euclid Ave., Cleveland 15, Ohio.

New BULLDOG, with its 25% greater holding power, provi surest possible anticreep protection, especially in frozen ball



When track is adequately anchored, stress is distributed over more ties. Ballast disturbance and tie skewing can thus be avoided.

True Temper's BULLDOG RAIL ANCHOR has a broad, deep a flat tie-bearing surface which reduces tie wear to a minimu

OTHER TRUE TEMPER RAILWAY PRODUCTS: BULLDOG Ballast Forks, Weed Cutters • BULLDOG Shovels • BULLDOG Safety Rail Forks, Hammers, Sledges • BULLDOG Scythes

TRUE TEMPER. BULLDOG RAIL ANCHOR

RAILWAY TRACK and STRUCTURES

R. B. RADKEY, the IC's engineer ties and treatment, gives information that will help you answer the question . . .

Last month, in the first installment of this two-part article, Mr. Radkey discussed the types of damage that cause tie failure. This month he describes the technique of tie inspection —what parts should get major attention and what to look for at each of them. The time to make a track-tie inspection also comes in for discussion.

When to Renew a Crosstie?

● Our definition of tie failure should be in terms of relative track effectiveness, which would be applicable to concrete, plastic, or steel ties, as well as timber. The tie must be appraised on its ability to hold gage, receive track spikes, accept tie-plate loading, transmit the loading, and deliver the loading to the ballast. Consideration must be given the fact that many ties will be partially deficient in some of these functions, yet be suitable for continued track service under the governing tie-maintenance standards.

A thorough on-the-ground inspection, where a qualified person takes several seconds to a minute examining each tie, is the best way to establish the track-performance condition of the ties. This inspection can not be done from the back of a train, from a motor car, or by a brisk walk down the center of the track. The proposed expenditure of more than five dollars per tie renewal justifies the inspection effort to insure the investment is made in the most appropriate place. The selection and marking of ties to be renewed is of major assistance in planning the renewal work, in distributing the ties to the correct location at minimum cost, and in the efficient execution of the renewals by the work force.

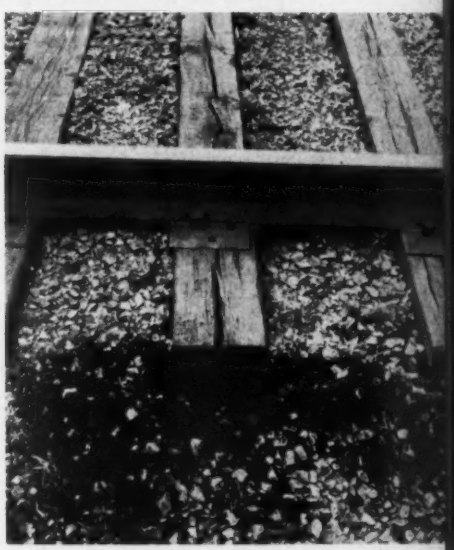
Tie Inspection Checkpoints ▸▸▸▸▸

The person qualified to select ties for renewal must be familiar with track construction and the details of track-maintenance work. A thorough, practical knowledge of what the tie must do is necessary to appraise its suitability. The inspection and selection of ties for renewal at the end of their service life is quite different from the inspection of new ties for purchase. Section foremen, track inspectors, or track supervisors are the best persons for this work, particularly if they have some timber and wood preservation knowledge.

The entire tie can not be seen; thus the inspector must look at the visible portion and thereon base his decision. Where ties are completely covered with ballast, inspection is impossible. Ballast maintained in a rounded shoulder down several inches on the tie

More ▸▸▸▸▸▸▸▸

SPLITS are most common end defect. Prying test with inspection tool will help judge the seriousness of a split.



TIE-END should be uncovered to determine if split extends through to bottom of tie.

Renew Crossties—When?

RING SEPARATION should be probed with testing tool to judge loss of strength in tie. Defect is serious here.

EVIDENCE of tamp kill should be confirmed by removing ballast for more thorough inspection. Damage here was minor.

ends makes the inspection easier. The easiest and most complete inspection is made where ballast is stripped from between the ties and plowed away from the tie ends. This optimum condition is too expensive to justify solely for tie inspection, but often the inspection work can be done when the track is stripped in connection with other work.

A sharp pointed tool, such as a hatchet with the head drawn into a point, or a pointed carpenter's bar, is a necessity. This tool is used to probe the wood under the tie plate, as a test pry in splits or checks, and to dig ballast away from the tie where detailed inspection is warranted. Ordinary track picks should be avoided as they are heavy to carry, difficult to use, and may easily do serious damage to a sound tie in the testing process. A sharp track pick can be thrown deep into a new tie; therefore, the ability to penetrate an older tie is a poor criterion of condition. The inspection party normally has some method of marking the ties to be renewed. Methods in common use are painting a spot on either the tie or rail base, adzing a cut on the tie, or sometimes making a chalk mark; however, the marking should have some degree of permanence so it will not be voided by several months of weather.

A typical inspection would include examination of the tie ends, the plate bearing areas, and the center top. Where the tie ends are sound, the plate in a firm position on top of the wood, and no unusual center marks are present, a glance will suffice to show the tie is satisfactory.

Defects at Tie Ends

Splits, checks, ring separations, crushing, shatter, decay, and tamp kill may be found at the tie ends. If the tie end is not sound and acting as an integral timber, further examination should analyze the seriousness of the defect. The split is the most common end defect. A vertical split, less than 5 in deep, protected with anti-splitting irons or dowels, is not serious. When the split opens wider than the size of the ballast rock, there will be difficulty holding the tamp. Splits extending under the tie plate or the entire length of the tie are most serious. A prying test with the inspection tool will help judge the condition. Often a tie end will split into several pie-shaped pieces, and in extreme cases the loading cannot be transmitted through the timber, due to the tie spreading.

Never assume that a wide-open crack appearing on the top of the tie is a split. In many cases this crack will be a check which terminates in the pith of the wood, the result of stress relieving. The bottom of the end of the tie should be seen to make sure the split is separating the tie into two separate pieces.

There is little reason to remove a tie because of checking, unless some other defect is present.

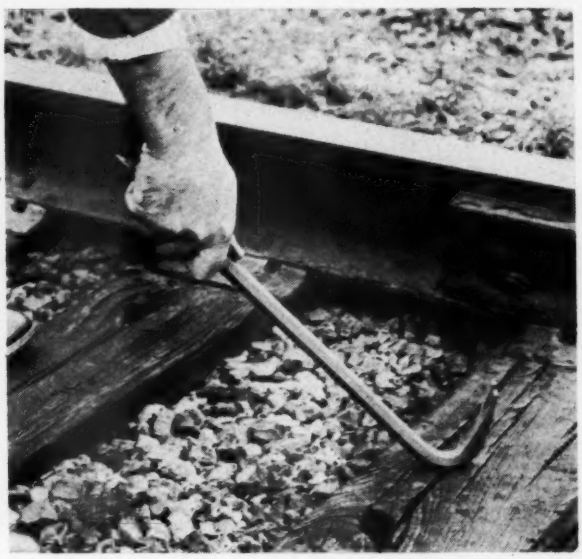
Ring separation and crush are easily seen at the tie end. This defect is of but little consequence if the evidence is in the form of small hairline cracks. After the crack opens up, sometimes taking many years, it is a matter of judgment as to when to remove the tie. A ring separation in a heart tie will progress until the outer layer containing the corners breaks away from the round pole-like heart, representing complete failure. A general track raise and tamping will change ballast bearing and accelerate ring separation. However, this does not mean that any sign of ring separation means the tie should be renewed immediately, remember that most specifications for new ties allow for acceptance of small wind shakes. The ring separation that extends only partially around the heart is not as serious as the complete circle.

Shattering and crush must be judged on the load-bearing capabilities. As with ring separation, there is usually a time interval of several years between the first indication and serious impairment of the tie.

How to Judge Decay

Decay may be in evidence at the tie end; however, again judgment is required. A small rot hole does not necessarily impair the tie's working ability now. Some

SETTLEMENT of tie plate may indicate presence of decay. Probing of wood under plate will show if damage has occurred.



SOUNDING will disclose if decay is present. The hole at a knot caused the inspector to be suspicious about this tie.

day it may spread and cause failure, but meanwhile many good years of service are realized. Probing and sounding with the inspection tool along the top and sides will help evaluate the decay damage. Sounding will help detect ties where the bottom has decayed away, leaving the top in relatively good condition.

A rounded bottom on the tie end indicates tamp killing is in progress. It is well to remove the ballast directly under the rail bearing to check the tie cross section because the most severe wear usually occurs here. A tie may be worn to the point of fracture under the rail with but slight rounding at the end, and no indication of trouble on the top of the tie.

Inspecting Tie Plate Areas

At the tie-plate bearing area decay, plate cut, spike kill and crush may be found. Plate cut is the most obvious, but if no other factor is involved, a slight cut is not damaging. A plate cut an inch deep is not particularly damaging in itself; however, it would be wise to check thoroughly for other defects such as crushing or spike kill. It is surprising how good many deeply cut ties look after being adzed to a new surface during rail-laying operations.

Plate settlement may mean decay or crushing and not be a result of abrasion. Decay will progress under the bearing area until little or no spike grip or rail support power is left. The inspector should probe the wood under the plate at any sign of plate settlement or spike looseness. Decay or deterioration is apparent in the manner the probe will enter the wood.

Loose spikes do not always mean decay. Track spikes prevent lateral motion; they do not hold anything down. Therefore, lateral looseness is much more serious than a vertical looseness. Wood swells when wet and shrinks when it dries. Dry wood may shrink away from the spikes, leaving them loose enough to be pulled with the fingers. Many ties will fall down when track is raised with the ties in a very dry condition. However, if the sides of the spike holes are sound, and the hole has a definite square appearance, there is no need for alarm. Spike kill is serious when the holes enlarge laterally permitting sideward movement of the spike. Spikes may be redriven to sound wood through other holes in the tie plate, the spike-killed holes plugged, and the tie continued in service in many cases. The out-of-face tapping down of spikes which are less than ½ in high disturbs the wood fibers in the hole around the spike and can cause unnecessary spike killing.

What to Look for at Center

The center of a tie is examined for decay or fracture. This portion of the tie has a large excess of timber cross section in comparison to normal stress and any defect should be of major consequence before renewal is considered. Decay of an untreated interior may be more damaging in appearance than in function if a thick shell of treated sapwood remains sound. On the other hand it is good policy, with ties of certain species, to insure that a solid-looking top does not conceal a completely rotten core or underside. Fracture in the center or under the rail bearing is established by stepping on the tie

The inspection tool . . .

. . . shown in the accompanying illustrations is a carpenter's bar, with the chisel end ground to a sharp point. Useful in probing for defects, this tool is preferred over the track pick which is heavy to carry, difficult to use, and which may easily do serious damage to a sound tie during the inspection process. A hatchet with its head drawn into a point could be used.

Renew Crossties—When?

TEETERING on a tie end and noting whether the center or other end moves will show if the tie is fractured in the center or under the rail.

end and noting whether the center or other end moves. A large splinter or check can have every appearance of a broken tie and yet be of little consequence.

Any method of selecting failed ties based on other than individual examination should be questioned. Individual pieces of timber are different from each other right from the moment they are cut in the woods. Ties of like species with similar preservative treatment may be expected to have considerable variation in service life. Where an average service life of 20 years is realized on a group of ties being removed because of actual failure, the first of the group will fail within 7 or 8 years, 60 per cent will have failed after 20 years, yet the last of the group will still be in track after 35 years. Removal of ties on the basis of old age alone is poor policy. Likewise removal based on an older preservative treatment being a different color is wasteful. A tie which has served 25 years, and now has a minor defect, will not suddenly disintegrate in the next several months. Orders directing the removal of ties older than a certain figure, or of a certain wood species, merely indicates inability to apply sound inspection principles.

Where one person does tie inspection for renewal work over several divisions or districts of a railroad, he becomes quite immune to the "special case" explanation. Quite often the local track force feels that tie inspection is an excellent idea to be applied elsewhere, but that special conditions of climate, traffic, curvature, grade, work force, train speed, flood waters, unstable roadbed, long work cycle, ballast or track clearance make inspection impractical and an unnecessary burden here. These are all factors to be considered, but none is an excuse for either over-maintenance or under-maintenance in regard to crossties.

Effect of Cycle Maintenance

In planning for tie renewals we must keep the ratio of tie cost and installation labor cost in view. Where ties are renewed every year, a tie not suitable for one year's service should be renewed. There is a trend toward mechanization and cycle maintenance where the tie-renewal force will work a certain track location at 2, 3, 5 or 7-year intervals. The tie condition must be up to standard during the intervening years, and selection of renewals on this basis requires judgment.

A large number of ties—all that show any indication of failing before the next cycle—may be removed by the cyclic gang if the railroad has an economic secondhand tie-reuse program. Ties may be again inspected after removal and separated as to scrap or for reuse in a lower class track. Where secondhand reuse is impractical, the tie should remain in its original location until all practical service life has been realized to hold the labor cost per tie at a minimum. The labor cost in handling and transporting secondhand ties, together with a limited service life, should be carefully compared to the delivered cost of a new tie with maximum service life, when planning the reuse of secondhand ties.

Complete crosstie failure is easy to recognize. Many ties may be seen which have partially failed to the degree that they should be replaced with new ties. Ties can be noted which are serviceable now, but that have major defects which will be justification for removal in the next two or three years. The ability to make accurate prediction of individual tie failure beyond three years is questionable. There will be a large waste of tie service life if renewal is based on failure three to seven years in the future, and all ties removed are thrown away.

When to Make Inspection

Tie inspection for renewal purposes should be performed with the least time interval practical before the renewal work is carried out. The optimum situation would be inspection and marking late in the fall in preparation for tie renewals in the spring. Records of the number marked will provide a basis for the next year's budget and tie program. Where a few maintenance-of-way specialists engage in marking renewals over a large property, the inspection must progress all year. This type of inspector gives the largest economic return if he is used at locations where the heaviest tie renewals are anticipated and in conjunction with track-surfacing or rehabilitation gangs. Inspection should be scheduled sufficiently ahead of the actual work so that the marking may be used in ordering and distributing ties. Markings over a year old can be used as a guide, but other renewals should be provided for.

Persons engaged in track-tie inspection work should frequently make detailed examinations of ties they marked after the ties have been removed. Thus the true nature of defects and the actual tie condition may be seen and the inspector is able to see whether his deductions were correct. A recheck of the track will show ties that should have been marked. This post-mortem review will permit the inspector to use better judgment in future work.

To provide dynamic railway service to match the dynamic American Economy...

...Super-Railroads Are Needed

NEW BOOK: "Super Railroads for a Dynamic American Economy," by John W. Barriger. Published by Simmons-Boardman Publishing Corporation, 30 Church Street, New York 7. Bound in strong paper.

PRICES: Single Copy, $2; 10 copies $17.50—postpaid. Further reductions on larger quantities, ranging down to $1 a copy (f.o.b.) for 200 copies or more.

● Railroad men who want an objective appraisal of the status of the railroads today, and a formula for their future success, will want to read this book by the Rock Island's vice-president. Those railroad employees whose work is primarily concerned with the fixed properties will find the book of special interest because of the vast program of improvements which Mr. Barriger offers for converting the carriers into "super railrods."

He set out to prepare a report that will provide some of the information needed "to facilitate the institutional changes required to provide dynamic railway service to match the dynamic American economy—railways with the highest standards of technological, engineering and commercial development." As the basis for recommendations given later in the book, he faces squarely the present status of the railroads, making no attempt to minimize the seriousness of the problems created by traffic erosion.

This situation, however, in nowise affects the economic advantages inherent in railway operation. Much is made of the "mass transportation" characteristics of the railroads in contrast to the "small-scale production" characteristics of the truck, the bus and the plane. "The mass production provided by the railroads is essential to the welfare and prosperity of the nation in peacetime and vital to defense in the event of war." That being so, says Mr. Barriger, "it inevitably follows that national transportation policy should be modernized to provide regulatory equality for these carriers." However, in his appraisal of the industry's potentialities, Mr. Barriger does not overlook the fact that, aside from the regulatory aspect, the railroads are faced with many difficulties.

In dealing with the problems facing the railroads, their managements have many accompliments to their credit. Among these the transition from steam to diesel motive power constitutes "one of the most brilliant and encouraging chapters in railroad history." What is now needed is "a modern, efficient and economical plant—equivalent in technological standards to the diesel locomotive . . ."

If the railroads are to take full advantages of their "mass transportation" characteristics, the properties must be brought up to standards of design and construction that will minimize operating costs and permit trains to be operated at high speeds for long distances. This will require a huge program of property improvements involving curvature and grade reduction, and the modernization of yards, signals and communications. Mr. Barriger estimates that $12,500,000,000 will be required, and to this he would add $7,500,000,000 for equipment.

Full realization of this program will be largely dependent on public policy toward the railroads, but in the meantime "management is challenged to do the very best possible with the means available."

Some Aspects of the Railroad Problem . . .

"Accumulated obsolescence in plant and cars is the hard core of the railroad problem."

* * *

"The financial and statistical measurements of current operations of individual railroads afford no basis for complacency respecting the ability of any company to withstand much more traffic contraction . . . without physical contraction which would permanently sacrifice established capacity and capital investment."

* * *

"The most serious aspect of the railway problem is the public's inadequate knowledge of what it has lost . . . by not having had the best railway transportation which modern engineering can provide."

* * *

"Railroads are confronted by the rivalry of fully modernized plant facilities in other fields of transportation . . ."

. . . And How It Can Be Solved

" . . . Super-railroads alone can meet such competition successfully and generate the volume of traffic essential to protect and re-establish the earning power of present investment—while providing a satisfactory return on the $20,000,000,000 additional that . . . will be required to effect the transformation."

* * *

"Major line changes and grade revisions are the basic condition precedent to the conversion of the present properties into super-railroads."

* * *

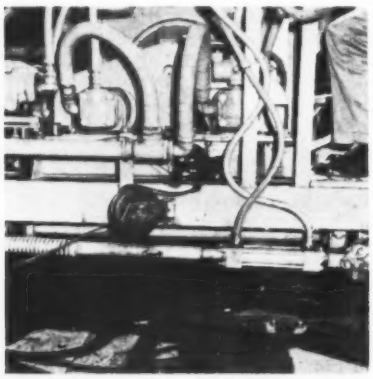
"Imagination and determination—these are the qualities which, if exercised, will make the second century of railroading one of far greater accomplishment in public service than the first. No other means of transportation can haul so much, so far, for such little expenditures of man-hours, of fuel, and of capital; and, by so doing, confer benefits on so many people."

Operational Features . . .

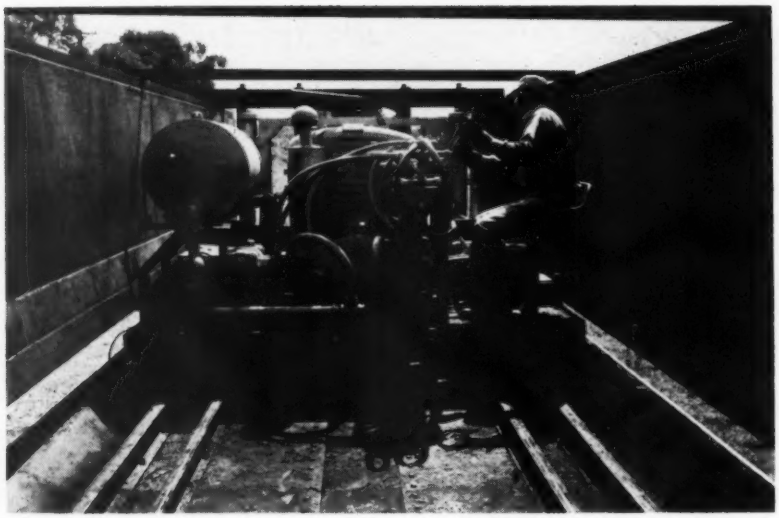
STEEL BULKHEAD at each end of car is removable to allow entry of machine.

ROLLER PLATE goes under tie to be unloaded—reduces friction.

SIDE DOORS are opened prior to unloading the ties.



CORD REEL (center) carries wire connected to push button and signal buzzer.



Latest in Automation . . .

Tie Unloading Machine

● The practice of unloading crossties by hand from cars has succumbed to mechanization. The first production model of a tie-unloading machine has been delivered to the Central of Georgia and is now in successful operation.

The machine is being manufactured by the Railway Maintenance Corporation, Pittsburgh.

Operated by one man, the machine is reported to be capable of unloading a car of 400 ties in about 45 min. Cost data are not yet available but officers of the C of Ga are convinced that the savings will be such as to pay for the cost of the machine in a very short time.

Special Tie Cars Used

The machine, mounted on four flanged wheels, is designed to unload ties from converted gondola-type cars as it moves through them. At present the C of Ga has constructed one such car and is in the process of building 11 more in its car shops at Macon, Ga. These cars are adapted from 40-ft flat cars and are fitted with welded steel sides approximately 6 ft in height. Each car is equipped with a steel bulkhead at each end, each consisting of four welded steel posts that can be removed individually to permit the machine to enter and leave the car. Each car will hold approximately 400 ties. A longitudinal opening of sufficient height to permit the passage of a tie extends the length of the car at the floor level on each side. Immediately above these openings are baffle plates that guide the ties down into position in front of the machine in position for unloading. To prevent the ties from working out of the car during the movement from the treating plant, the openings may be covered by a series of hinged steel doors.

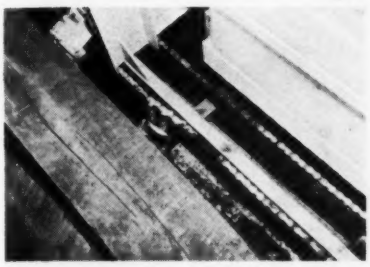
Running the length of each car are two sets of rails. One pair of rails is used by the tie-unloading machine as it moves through the car. The other pair, placed at a slightly higher elevation than those used by the machine, serve as a support for the ties. The ties are loaded with a sling and placed evenly at right angles to the sides of the cars.

In addition to the special tie cars, an ordinary flat car, equipped with running rails only, is provided as a storage car for the machine when it is not being used or when moving from one location to another. To move the machine from the storage car to a loaded tie car, or from one tie car to an adjoining one, short pieces of rail are used to bridge the gap between the cars.

In past years, it has been the policy of the C of Ga to unload the ties used in the maintenance program with a section gang while being handled by a train, or at sid-

UNLOADING MACHINE, working inside car, pushes tie out the open side door "endwise."

"FINGER," attached to chain, makes contact with tie end, pushes tie through the side opening.



OUT SHE COMES! Propelled by mechanism above, tie is unloaded upon signal from the foreman.

ings near the work site and then transfer them by means of push cars to the points where they were to be inserted. These former methods required that the ties be handled at least twice. Through the use of the tie-unloading machine, the ties can be distributed from a work train and unloaded exactly where they are needed, with three men.

In addition to other advantages, one of the tangible benefits which should accrue from this operation will be a reduction in personal injuries. Obviously, when heavy material is being handled by numbers of men, chances for injury are multiplied, but when this heavy material is machine handled, there should be a corresponding reduction in injuries.

At present, the road is operating on a four-year cycle in carrying out its tie-renewal and surfacing work. Each track supervisor is responsible for determining which ties will be replaced on his territory in connection with the maintenance program. Before the arrival of any ties for the cycle year, he marks those ties which are to be renewed. Thus, when a shipment of ties arrives, each tie can be unloaded where it is needed.

The road is divided into three maintenance divisions and officers feel that the one tie-unloading machine and the 12 tie cars will be sufficient to keep all three divisions supplied with ties. The plan is to rotate the use of the tie-unloading machine and the cars among the divisions. For example, when one division has received and unloaded a shipment of ties, the cars will be returned to the treating plant at Macon for reloading. This second load of ties will be sent to one of the other two divisions. Meanwhile, the first division is inserting the ties it has received. Current plans call for six cars to be unloaded while the other six empty tie cars are being returned to the creosoting plant for reloading. These reloaded cars will be sent to a different location, where they will be met by the tie-unloading machine and operator. It is estimated that by the time each division has received a shipment of ties, the first division will be nearly ready for an additional shipment.

How the Machine Operates

Upon arrival at the work site, the bulkhead of the tie car adjoining the car carrying the machine is removed and the side doors opened. The machine then moves into the tie car until its front end is against the ties. A continuous horizontal chain, which moves around sprockets at each side of the front of the machine, is equipped with a "finger" or lug. As the chain revolves, the lug engages one end of the tie at the bottom of the pile and pushes it through the opening in the side of the car. As the tie leaves the car, the tie immediately above the one being removed drops down into position to be unloaded. The chain revolves at 100 rpm, giving a chain speed of 225-ft per min.

The ties can be unloaded on either side of the car by simply reversing the direction of movement of the chain. The design of the opening in the side of the car and of the machine combine to hold the tie in a horizontal position until it is clear of the car. This, plus the fact that the ties are unloaded at floor level instead of over the side, is said to make it possible to place the ties more accurately. By varying the speed of the chain, it is said that the ties may be placed close alongside of the car or five or six feet away.

Will Use Three-Man Crew

The road plans to employ three men with the work train when unloading ties with the machine. One man, who is permanently assigned, will operate the machine, while a second man (usually the track supervisor) will walk alongside the car and signal the operator, by means of a buzzer system, when to unload a tie. From this position, the supervisor will also be able to control the speed and movement of the train by hand signals. The third man (a section laborer) will be assigned to move any ties that fail to fall clear and will also remove the bulkheads as needed so the machine can pass to the next car.

The tie-unloading machine, weighing 7500 lb and powered by a 50-hp gasoline or diesel engine, is 6 ft 9⅝ in long, 8 ft 9⅝ in wide and 5 ft 4½ in high. The machine and all controls are hydraulically powered through two pumps driven by the engine. The unit is propelled by a four-wheel drive from a hydraulic motor through cone drive reduction. It is also equipped with rail sanders, hydraulic powered rail clamps, and hydraulic brakes supplemented by a manual parking brake.

If the machine's running rails should become slippery from creosote the operator has the choice of using the sanders or hydraulic rail clamps to provide extra traction or insure positive braking.

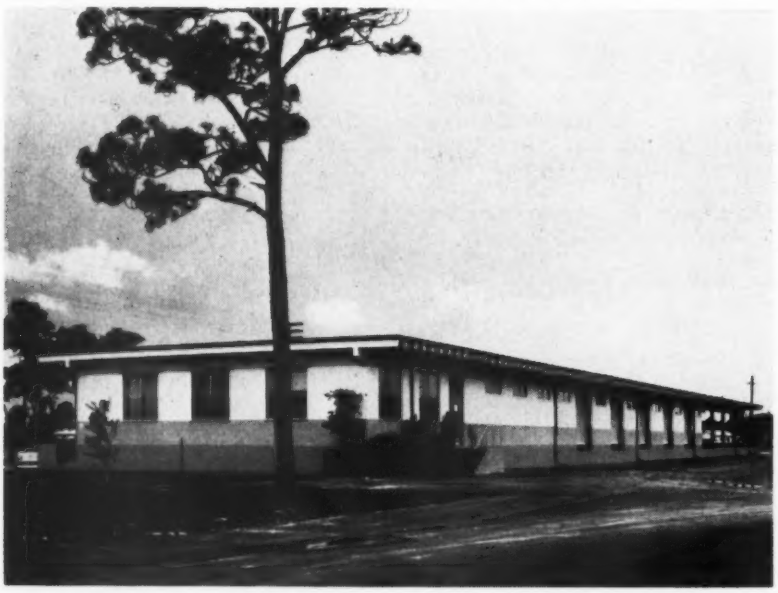
SOLD AT $600,000, this former FEC station and its site will be used by the city for downtown development.

BUILT FOR $648,500, this modern station and the freighthouse shown below do credit to both the city and railroad.

Old Gives Way to the New . . .

When a City and Railroad Get

Project Included a New Freighthouse Too . . .



NEW FREIGHTHOUSE of the Florida East Coast is located away from the congested district of the city but within convenient trucking distance to the business firms of Fort Lauderdale. It is built on the opposite side of the tracks from the new passenger station on grounds which are attractively landscaped with plantings of tropical shrubbery and palms. It is a concrete-block building, 343 ft long by 58 ft wide, and has a roof of prestressed-concrete units. Besides the usual ramp and loading platforms, it contains space for a general office and two private offices for the local freight-traffic staff.

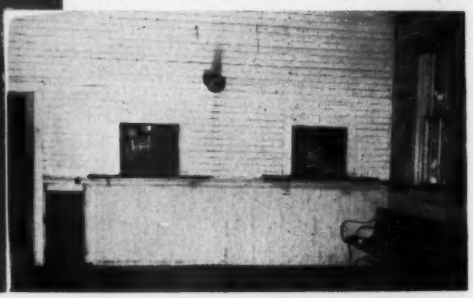
● The new modern passenger station and freighthouse which the Florida East Coast completed and opened at Fort Lauderdale, Fla., on June 2, are an unusual example of city-railroad cooperation in solving mutual problems. They are also an indication of the rapid rate at which South Florida cities are developing.

When the railroad's old stations at this point were erected in 1911 and 1912, Fort Lauderdale had a population of less than 200 and the facilities were more than adequate. Since then its population has more than doubled every 10 years until at present it is estimated at 75,000.

As a result of this remarkable growth, the city and its business interests desperately needed more space for downtown development and the railroad needed more adequate station and freighthouse facilities than the antiquated ones which lay in the heart of the city. City and railroad officials got together, and the city agreed to pay the railroad $600,000 for its old station property, a strip 100 ft wide by two blocks long, and also to assist the railroad in securing a site suitable for new stations 1½ miles south of the old location. The new site was acquired at a cost of

NEW WAITING ROOM is bright and cheerful and the open ticket counter, of panelled white oak, invites business.

OLD WAITING ROOM, belonging to a bygone era, provided a gloomy atmosphere and few comforts for railroad patrons.



Together

$143,500, and the new stations were built at an approximate cost of $505,000. The city also cooperated in closing certain streets to make the new station layout possible.

Both parties are happy over the solution. The city acquired desirable property for downtown development and the railway was able to build adequate modern stations at a moderate out-of-pocket expense.

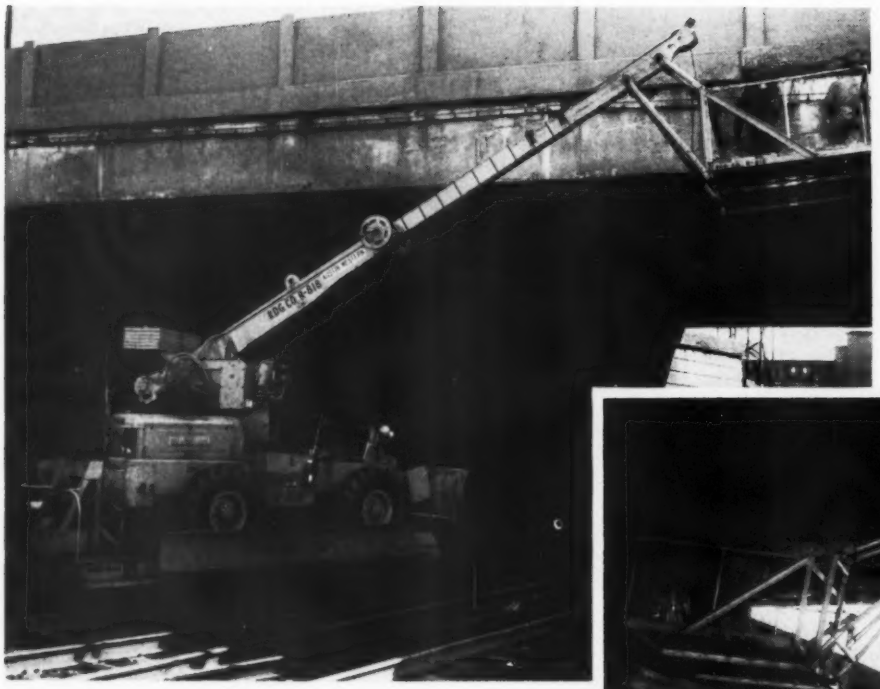
The main building of the new passenger station is 188 ft long by 36 ft wide and is constructed of concrete block faced with pink Roman brick. An arcade leads from the street and parking area to tracks and train platforms.

The main waiting room has plaster walls, an acoustic-tile ceiling, recessed fluorescent lighting and white-oak wainscot. Flooring is of terrazzo, except in the baggage-room. A distinctive feature of the depot is a large roofed portico on the south, actually an open-air waiting room, with seating facilities and tropical planting bins.

The new stations were designed by the railway's architect, C. G. Henninger, under the supervision of L. C. Frohman, chief engineer. John B. Orr of Miami was the contractor.

LOUNGE atmosphere is achieved with tropical planting bins, colors and informally arranged chairs, divans and tables.

TOWNSPEOPLE gather under station's portico to hear former governor's remarks at dedication ceremony.



INSPECTION PLATFORM, attached to telescoping boom, enables workmen to remove loose concrete from overhead bridge. On this job the . . .

. . . **PLATFORM** was also swung beneath the bridge to give access to underside of span and to the abutments.

For Their Special Needs . . .

They Got a Multi-Purpose Crane

● Maintenance engineers of the Reading saw an urgent need for a rubber-tired crane that could travel on the rails as well as the highway. This need has now been filled. The resulting unit of equipment, pictured on these pages, is of interest because of its unusual nature and its versatility. Of equal interest is the story behind the development of the machine.

The sequence of developments was outlined recently by Samuel E. Haines, Jr., formerly supervisor maintenance and work equipment of the Reading, and now port facilities engineer. He stated that the Reading had made a time study of crane operation and "knew that an off-track–on-track machine would be of tremendous advantage. So far as we knew, no equipment company had combined in a single crane all the various features which we envisioned."

He related that the Reading had a number of Koehring RailAid crawler cranes with separate propulsion cars, which had "proved to be very useful and successful. In open country where trains run less frequently they can go nearly everywhere and do anything. They are all equipped to operate clamshells, hooks, magnets, backhoes or draglines." What the railroad wanted, explained Mr. Haines, was a rubber-tired machine that would supplement the RailAids, with the latter staying on big jobs, while the rubber-tired machine was used on projects for which it was best suited.

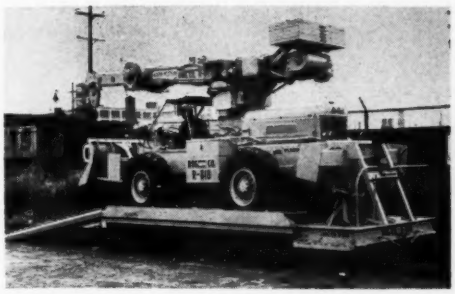
The first clue to the solution of the railroad's need for a rubber-tired on-track–off-track unit came during an equipment show in Philadelphia, according to Mr. Haines. On display at the show was an Austin-Western hydraulic crane with four large rubber wheels. The crane had a telescoping boom and could therefore work under overhead wires without booming up. Next to it at the show was a machine for pulling railroad cars, which had both flanged wheels and rubber tires so that it could run either on the highway or on the rails. "What we wanted" said Mr. Haines, "was a combination of these two machines."

Three men went to work on the problem: Mr. Haines, representing the railroads; Thomas V. Murphy, representing the Stewart Equipment Company, Philadelphia; and Edward Brown, chief engineer of the Austin-Western Company.

After much discussion of several alternatives for satisfying the requirement for an on-track–off-track machine it was decided to develop a separate track-mounted car for the crane. In other words, the crane was to crawl up onto the car, couple up to it, and propell itself down to the tracks. To convert to highway operation the crane would crawl off the car, pick its car off the tracks, put the car on a trailer and tow the entire outfit down the highway.

Among stipulations made by Mr. Haines, were that the crane be able to operate an inspection platform, a clamshell bucket, a hook and a magnet, and have a telescoping boom. Mr. Haines reported that the discussion took on a facetious turn when Mr. Brown jokingly asked if the railroad also wanted a bulldozer blade on the crane. "By all

From On-Track to Off-Track . . .



1 With ramps in place, crane is ready to dismount from its on-track propulsion car.

2 Moving from (and onto) the car by means of the ramps is a simple matter. Note that the rubber-tired wheels straddle the track rails.

3 Crane has picked up the propulsion car and is ready to set it off the track.

4 With track car secured on special highway trailer and coupled to crane, the rig is ready to move over highways to next job.

means," remarked Mr. Haines, "so it could be used for grading parking lots, back-filling ditches, and removing snow from grade crossings."

The first crane was built and delivered to the Reading late in 1955. Its rated capacity is 6 tons at a 10-ft radius. It has outriggers, four large pneumatic tires, a hydraulic clamshell bucket, a dozer blade 8 ft wide, a gasoline engine with torque converter, four-wheel steering, a generator for a magnetic, a pintel hook and brake connections for the special trailer, a rail car, a platform which can be mounted on the boom, and a telescoping boom.

Mr. Haines reports that the crane has already been tested on quite a variety of jobs and that it has already done a few jobs which didn't occur to the originators when they were planning it.

Mr. Haines reports that the new crane "is not as fast as a regular crawler crane in a ditching job, but can get to the job faster than a crawler. It has the advantage over a crane limited to the rails in that once at the working site it can work from the track or from the ground. It is not as fast as the normal rail crane in bucket work, but it can reach under the pole lines with its telescoping boom."

Here Are Some Jobs the Machine Has Done

Digging Ditches—In a yard it worked on the rails digging ditches between tracks for duct lines and casting the dirt into gondolas on the adjacent tracks. It worked with a clamshell bucket and operated from its rail car because it was in the midst of a yard area with many tracks.

Unloading Box Car—Here was a case where the crane was located in the center of a city and had to travel to the outskirts. If it had traveled on the rails it would have had to clear frequently for passenger trains. So it traveled over the highway approximately 25 miles, unloaded a box car of prefabricated battery houses, and traveled back to the city, all in the same day. On the job, the telescoping boom enabled it to reach right into the box car, thus speeding up the unloading. The box car had been placed on a siding, making off-track equipment a necessity.

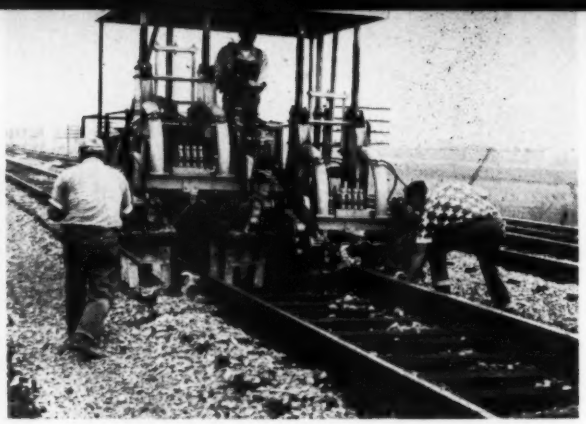
Installing Water Pipe—The crane traveled to the site by rail, climbed off its car, dug the ditch, laid the pipe, backfilled the ditch with its bulldozer blade, climbed back onto its car, and departed by rail.

Cleaning Off Tracks—In Philadelphia there are tracks running in some of the streets. At Master Street some tracks had been covered by dirt and stones during construction work. The crane first bulldozed the tracks clear, then loaded the material into gondola cars. At this location it also unloaded cars of girder rail by working from the street.

Overhead Work on Bridge—It was necessary to remove loose concrete from an overhead bridge. The inspection platform was hooked up to the boom and the crane worked from the rails (see pictures opposite page). It swung the workmen from spot to spot, allowing them to remove the concrete as they wished, without having to work under the loose concrete. From one track they were able to swing over alongside the abutments and do a thorough job on them.

Laying Rail—The crane recently finished laying rail on the elevated structure outside the main terminal. In this case it was working under the catenary wires. First it picked up the rail in a nearby yard and loaded it onto push trucks. Then it hauled the rail to the site and unloaded it. Next it distributed the fittings in the same manner but used its magnet. Next it loaded the rail-laying machines such as adzers, spike pullers, spike drivers, gaging machines, etc., onto push trucks and took them to the site, making several trips. Next it placed these machines on the track and removed and placed the rail in the rail-laying operation. At the end of the job, it removed the equipment from the track, picked up the rail, hauled it to the yard, and picked up the fittings using its magnet.

THREE MEN and a foreman do the raising, giving the track a 1½-in lift. Very little fresh ballast is required.



TRACK MAINTAINER enables smaller gang to tamp 10 times as much track as larger gang using hand-held tampers.

Fast Work With Small Gangs . . .

. . . After surfacing its track for years with pneumatic hand-held tampers, the B&O has equipped each one of its divisions with a production tamper. Results so far have been startling as smaller gangs now tamp 10 times as much track as formerly.

● This year, surfacing gangs on the Baltimore & Ohio, using split-head types of production tampers, are raising 10 times as much track per day as they did last year when using about twice as many men equipped with pneumatic hand-held tampers. Furthermore, the track surfaced this year shows a more uniform compaction and tighter ties, according to the road's maintenance officers.

The B&O purchased 19 Jackson Track Maintainers and 4 McWilliams tie tampers for use on its 18 divisions. Each division has at least one machine and on four larger divisions more than one are used. This number, it is believed, will enable each division to keep its track surfaced in five-year cycles. The split-head types of tampers were selected, it is explained, because they permit tamping through a large portion of turnouts and they enable an operator to obtain uniform tamping on each end of ties on curves and on track where additional insertions of the tamping tools may be necessary on one side or the other.

Getting Good Production

The surfacing gangs are comprised of six men on the raising operation and five men on the lining work, with each operation supervised by a foreman. On some divisions the lining work is performed by two men using a Railway Track-Work hydraulic track liner. An extra man, equipped with a portable telephone, is used as a flagman where flagging is necessary. Although this is the first full year that the gangs will have used production tampers, they already are raising an average of 3,700 ft per day in stone ballast, including delays for trains, weather and machine repairs. The highest average production of any one gang reported to date is 4,506 ft per day.

It must be pointed out, however, that conditions on this road are such that they are conducive to high production. During the Korean War period the road concentrated on track maintenance so that, in general, its tie and ballast conditions are generaly good at the present time.

Renews Ties in Advance

Even though tie renewals are relatively light, the road recognized the fact that frequently the renewals will be heavier in some locations than in others, thus presenting the possibility that tie-renewal operations might delay the tamper. For this reason, it decided to make the tie renewals in advance of the surfacing work so that the greatest

. . . The road is also experimenting with a gang of 21 men for making a complete job of renewing ties, and raising, surfacing, lining and dressing track.

● Because of the reported success of other roads which put in their ties while the track is raised, the B&O has organized an experimental gang of 21 men to find out if this practice will prove economical on its lines. This experimental gang is now working near Chester, Pa., where renewals are running from 200 to 250 ties per mile, and it is doing a complete job of renewing ties and surfacing, giving the track a 1½-in lift. It has been furnished with several machines to permit greater production, and is divided into four units; a tie gang, a surfacing gang, a lining gang, and a dressing-and-clean-up gang.

Crossties are unloaded two weeks in advance of this gang by the section forces, which also distribute kegs of new spikes as needed.

The first unit, for renewing ties, is comprised of a foreman and seven men and is equipped with a Nordberg hydraulic spike puller, a Nordberg Gandy, a Fairmont tie-bed scarifier and a Nordberg spike hammer. One man of the tie-renewal unit goes on ahead with the spike puller and pulls the spikes on all ties which are marked with keel for removal.

He is followed by the Gandy and four men. Two of these men set a jack under each rail just ahead of the machine and raise the track slightly so the tie plates and tie can be easily removed. The third man applies the tongs of the machine to the ties and removes them after the ties have been pulled out of their beds. The fourth man operates the Gandy.

Behind this operation is the tie-

LINING is usually done by men with bars but some gangs use hydraulic liners.

BALLAST REGULATOR helps on the dressing as well as the raising operation.

output of the production tamper could be obtained without being impeded by any work immediately ahead.

Accordingly, the work of renewing ties in the surfacing territory started last October. This work consisted principally of renewing the poor joint ties. Early this spring, about two months before arrival of the tamper, the other ties were installed. The ties were put in by the "digging-in" method so as to preserve the existing track surface. Tie renewals run about 260 per miles where the track is to be surfaced and most of the stone ballast is clean and in full section.

Little Ballast Required

Before the surfacing gang begins work, a Kershaw Ballast Regulator is used to pull the ballast in toward the rails. Since the track is raised only 1½ in, very little fresh ballast is required. Where the ballast section is full, only about 2½ cars of fresh ballast are unloaded (using ballast pans) per mile. Occasionally, some spots are encountered where the ballast is deficient and more ballast, up to the rate of 12 cars per mile, is unloaded.

The raising gang employs one man with the spotboard and levelboard, two or three men handling 10 track jacks under the direction of a foreman, and the operator of the tamping machine. Where additional ballast is needed, the third jackman forks ballast inside the rails. Three to four insertions of the tamping blades are made at each tie to assure proper compaction. Another gang works behind the tamping machine, lining and dressing the track. This gang, employing from five to six men, uses Buda track liners.

The B&O is satisfied that production will be even better as the men become more adept with these machines. For the month of April, the output of all gangs averaged 2,750 ft of track raised per day. For the first half of May the average production of the gang was 3,700 ft per day.

This compares with an average output of 400 ft per day in previous years when using 14 men with 8- and 12-tool pneumatic hand-held tampers. Also, the old surfacing gangs were frequently called upon to do other work requiring compressors and pneumatic tools, causing interference with the surfacing programs. With the present production tampers, these machines are in constant use for the purpose for which they are intended so there is now greater assurance that surfacing programs will be completed.

Departmental Cooperation

In general, the production tampers work on one supervisor's territory for two months and are then passed along to the next supervisor. When working on double-track territory, arrangements can usually be made with the operating department to permit the surfacing gangs to have full use of the track on which they are working, except in some instances where a few of the more important trains are not detoured over the other main. It is the surfacing gangs working under these conditions which are achieving an average daily production of 4,500 ft.

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bed scarifier and three men, one of whom operates the machine. This unit prepares the bed for the new tie, digging to a uniform depth at right angles to the track. The other two men with this machine remove any excess material left under the rails and smooth the bed where necessary.

Two other men pull the new tie into place with tie tongs, reapply the tie plates and fork ballast to the center of the track, after which the tie is spiked. This is done with the spike hammer and three men—one man operating the machine, one man nipping, and the third man holding a new spike in vertical driving position with a spike holder. The spike hammer is mounted on a Nordberg carriage which permits the hammer to be used on either rail.

Altogether, these tie-renewal operations call for 13 different jobs, but they are handled by 7 men, as

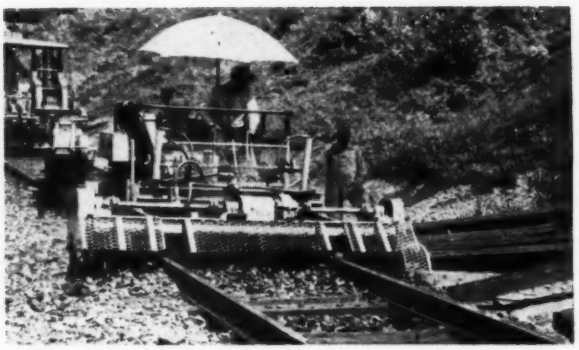
ADVANCE MACHINE of the experimental gang is the Nordberg hydraulic spike puller.

More ▸▸▸▸▸▸▸▸

BALLAST is pulled up on shoulders in advance of tampers.

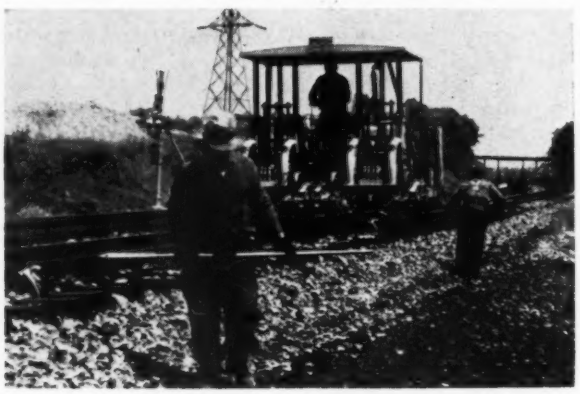
More Views of Experimental Gang . . .

AFTER track has been jacked up slightly so that tie plates can be removed, a Nordberg Gandy pulls old ties out of beds.



TIE BED is uniformly dug at right angles to track by a Fairmont tie-bed scarifier so that new ties can be inserted.

NEW TIES are pulled into place by two men with tie tongs after which the spikes are driven by a Nordberg spike hammer.



TAMPING is accomplished by a Jackson Track Maintainer. Five jacks are used on each side for raising operation.

directed by the foreman. For instance, the operator of the spike-pulling machine can first pull the spikes on 50 ties which are to be renewed, then drop back and work the spike hammer until the Gandy just about reaches the last tie from which the spikes have been pulled, at which time he will again operate the spike puller. Other men similarly fill in on a number of different jobs.

Is Ready for Surfacing

At this stage of the work, all bad ties have been installed and spiked and the centers filled with loose ballast on each side of every new tie. A Kershaw Ballast Regulator (operated by a man in the dressing-gang unit) is then used to pull the ballast from the shoulders and intertrack space toward the ends of the ties. Fresh stone ballast is unloaded where necessary but, because of the good condition and full section of the existing ballast, this does not require more than an average of two cars per mile. Ballast pans are used to unload this ballast. The track is now ready for surfacing.

The track raising and surfacing is handled by five men and a foreman, One man handles the level-board and spotboard and three men set 10 jacks, raise the track, and move the jacks ahead. The fifth man operates a Jackson Track Maintainer, making from three to four insertions of the tamping blades.

When this experimental gang was working in May near Chester, Pa., the tie renewals were taking more time than was anticipated because of the inexperience of the men with the machines. This permited the production tamping machine to overtake the tie gang. To avoid delaying this pace-setting machine, the tamper worked through the tie gang but did not tamp any of the ties marked for renewal. Later, when these ties had been changed out, the tamping machine dropped back and tamped those ties.

Lining and Dressing

The track lining is handled by one man, equipped with a Railway Track-work hydraulic track liner, under the direction of a foreman who uses a Hayco Lining Scope. Behind the lining, and working under the same foreman, comes the dressing and clean-up unit, comprised of four men. One man operates the Ballast Regulator for dressing up the ballast shoulders and also assists the three other men in filling in the cribs, cleaning off the tops of ties and in finish dressing the shoulders. This gang also does the work of piling and burning the old ties.

Changes Planned

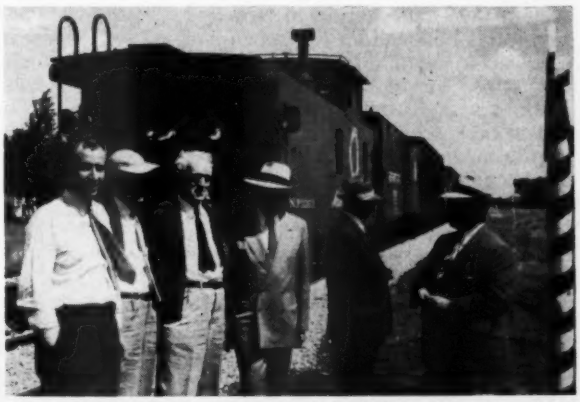
The experimental gang has been working under traffic and is protected in the daytime by a 30-mph slow order. At night, however, the trains operate at normal speed. The foreman of the tamping unit has a portable telephone with which to keep in touch with the dispatcher so the machines can be cleared for trains.

The performance of this gang has not been up to the 3,000-ft per day output expected by C. R. Riley, chief engineer maintenance. For this reason some changes in the organization are contemplated to improve its output.

CITICO YARD—the Southern's newest at Chatanooga—is designed for the "tops" in efficiency. The gravity yard, with a capacity of 1,772 cars, features automatic control for power switches and retarders, television for viewing car numbers and recording them on film, and radio and special talk-back loudspeakers for fast, efficient communications. The twelve tracks hold complete 190-car trains. The new classification yard is directly connected to the receiving yard.

THESE CHIEF ENGINEERS were among those in attendance when the AREA's Committee on Economics of Railway Labor recently inspected a ballasting operation on the Northern Pacific involving the use of the Mannix undertrack sled. Left to right: W. B. Throckmorton, CRI&P; J. L. Fergus, NC&StL; Frank R. Woolford, WP; H. R. Peterson, NP; R. J. Gammie, T&P; and E. J. Brown, Burlington Lines.

News Briefs in Pictures . . .



LINE AND GRADE CHANGES on the Denver & Rio Grande Western are being carried out with the assistance of the two Bucyrus-Erie draglines shown here working the cut slope. (Denver & Rio Grande Western Photo).

ONE OF THE LONGEST single metal bin-wall jobs ever installed keeps new highway fill of Route 71 at Kansas City off the tracks of the Burlington. The wall, 5,200 ft long, was erected at the rate of 250 ft per day. (Armco Photo).

WHAT'S THE ANSWER?...

. . . a forum on track, bridge, building and water service problems

Merits of Uniform Toe Line

What are the advantages of maintaining a uniform ballast toe line? Disadvantages? Are the advantages sufficient to warrant the expense? How best can such a line be established and maintained? Does the type of ballast affect the method used?

Says Expense Is Justified

By T. J. Barcio
Roadmaster, Chicago & North Western, Sparta, Wis.

My experience as to the advantages of maintaining a uniform ballast line is that track will not develop low spots as easily, and will be kept in better line. At any location where the ballast line is weak low spots will be created and eventually drag the track out of line, thereby making more work for the section men and causing increased expense. I believe that the expense involved in maintaining a uniform ballast toe line will be warranted by the advantages obtained from it.

The best method of maintaining a uniform ballast line is by means of the new machines now on the market, such as the ballast equalizer or the ballast discer-scarifier. If these machines were operated over the line in the fall after tie renewals have been completed, the ballast line could be made easily and would be maintained a good deal longer or at least until tie-renewal work is started the following spring. These machines can also be used to good advantage in the spring for weed killing to the ballast line.

Stone ballast is the easiest material with which to hold a good ballast toe line.

Toe Line Should Vary

By Assistant Engineer

There has been a great deal of controversy about the desirability of maintaining a uniform ballast toe line because the thinking of far too many track men is that a uniform toe line is for appearance only. Admittedly, it certainly does enhance the appearance of track! It warms a trackman's heart to stand on the rear end of a train and watch mile after mile of track having a uniform toe line pass by—provided that the track rides well. It shows pride in the work and the same reaction no doubt is felt by our patrons, the passengers. That is one advantage.

Another advantage might be that, by maintaining the uniform toe line, there is less waste of ballast materials.

But let's look at this a little more closely. Each railroad adopts a standard ballast section to meet its needs and suit its kind of ballast. The standard is premised on so much ballast under the tie, how far down from the tops of the ties the ballast should be maintained at the tie ends, whether or not a short berm is desirable, and the sloping of the ballast shoulders to the surface of the sub-ballast or subgrade. This shoulder sloping may be in the ratio of 2 to 1 or 2½ to 1, depending upon the kind of ballast being used, and is designed to more than equal the angle of repose of the ballast materials so that they will not work beyond the toe line. Thus, the shoulder ballast gives stability to that portion of the ballast which actually supports the traffic loads.

That is the ballast section when a railroad is built. But we are talking of a uniform toe line maintained after a surfacing job, and conditions are no longer the same. The lower portion of the original ballast section has now become intermingled with dirt, so the track is raised 1½ to 4 in, using the existing ballast from the cribs, and fresh ballast is applied to give a sem-

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Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered in the November Issue

1. Where the "cycle" method of making tie renewals is used, what factors determine the length of the cycle? Explain.

2. What causes cracks to appear on the surfaces of asphalted roofs? How can this condition be prevented? Repaired?

3. What practical methods are available for the heat treating of switch points in track? Are any special precautions necessary? Is there any advantage in the use of heat-treated switch points?

4. Can the installation of tie pads be justified on bridge ties over 10 years old on steel bridges? Will the increased life of these ties offset the damage which is done by pulling and redriving the spikes? Explain.

5. In designing diesel servicing platforms, what advantages are there in placing the service lines underground? Overhead? What are the advantages of each? Explain.

blance to the top surface of the original ballast section.

If the ballast on the shoulders is sloped on the 2-to-1 ratio, we find that the subgrade is now in a different height relation to the top of ties than it was when the road was built. Now, to maintain the 2-to-1 slope, we must necessarily increase (or decrease) the distance which the toe line is from the gage side of the near rail. If, on the other hand, we hold fast to the toe-line distance from the rail, we must change the slope of the ballast shoulders. And, when we do that, we are changing the stability of the ballast section.

To maintain the stability and strength of the ballast section the toe-line uniformity must be forgotten and the slope of the shoulder ballast must be the guide. As a result, the toe-line distance from the rail must be variable to meet subgrade conditions. The only way that the slope of the shoulder ballast and the toe-line distance can be made uniform, is to plow out all of the existing shoulder ballast before making the track raise. Even so, the expense of laying a plank along the subgrade a uniform distance from the near rail to obtain a clear demarcation between the ballast and subgrade materials is exhorbitant. In view of the price of new ballast, most roads prefer to clean their shoulder ballast.

Reconditioning Lubricating Oil

To what extent is it practicable or economical to provide facilities for the reconditioning of lubricating oil used in diesel engines? What is the minimum facility necessary for the reclamation of such oil? Explain.*

Should Have Three Machines

By T. T. Blickle
General Manager, Mechanical Department, Santa Fe, Chicago

It is practicable or economical to provide facilities for the reconditioning of lubricating oil used in diesel engines, provided certain qualifications are fulfilled. First, the volume of oil to be processed must be such that there is a continual supply of oil to the plant in sufficient volume to provide for economical reclamation. Second, the size and nature of the facility for reclamation of oil must be such as to obtain maximum continual output of reclaimed oil for the number of men employed. Third, the relative cost of the investment in the plant; the fixed charges on the investment are necessarily added to the cost of the oil reclaimed.

For efficient, economical operation, a plant utilizing smaller unit-capacity machines, that is 100 gal per charge, will be more effective. Such a plant should contemplate at least three machines, since one operator can take care of this number.

Therefore the output is three times as much as if a single machine were installed. There is an added advantage: There is very seldom more than one machine down at a time for cleaning or repairs.

Utilization of such a plant must be considered as a three-trick operation, that is, the plant is not shut down except week ends, since a daily shutdown would necessitate reheating each time to start it up, which results in a production loss of 15 to 20 per cent of a normal 8-hr output. Using two 100-gal machines, and with a three-trick operation, one man each trick, the normal expected output would be approximately 5,000 gal of oil per week. With three-machine operation—also on a three-trick basis, with one man each trick, the output should be approximately 7,000-7,500 gal per week.

In addition to the actual operators of the equipment, it is probably necessary to have a fourth man to supervise the plant in general, who is sufficiently familiar with ordinary checks to determine the quality of lubricating oil so that he may perform the necessary tests to maintain the quality of the reclaimed product. These tests, of course, are the usual laboratory checks of viscosity, viscosity index, pour point, carbon residue and ash in the reclaimed product. This also means that laboratory facilities for making this check either must be incorporated in the plant or must be available.

If the reclaiming of detergent or fortified oil is contemplated, then additional facilities should be provided for restoring the additive to the reclaimed product at the reclamation plant. This does not add to the cost of reclaiming the oil other than the cost of the additive replaced, and the cost of the facilities for performing the proper mixing of the additive in the reclaimed product since this function can be performed by the same operator who does the reclaiming.

Heretofore this railroad has considered it both practicable and economical to reclaim diesel lubricating oil. The plant has consisted of two machines operated on a three-trick basis, with one extra man to look after the repairs and supplies and check the quality of oil. At the present time this plant is being rebuilt with a third machine added since it is expected even greater economies will be obtained.

Cost About One-Half New Oil

By W. H. Giles
Assistant Chief Engineer, Missouri Pacific, St. Louis

At facilities where a large number of diesel units are serviced the accumulated quantity of used lubricating oil amounts to thousands of gallons monthly. About 200 gal of new oil are required to refill a road unit, and a unit in normal operation requires two changes each year. A facility regularly servicing from 150 to 200 assigned units will produce from 60,000 to 80,000 gal of used oil during the year.

The process of re-refining used lubricating oil is well known and if the accumulation of oil amounts to as much as 6000 gal a month, the installation of a small 100-gal batch plant is justified. Where the accumulation is greater or can be augmented by accumulations shipped from other servicing facilities, a larger capacity plant is indicated.

A properly supervised and regulated plant will process about 2½ times its batch capacity during a 24-hr period and will recover about 75 per cent of the dirty oil. The by-product from the processing plant is available for preparation of road oil, weed killer and other products used on a railroad.

The cost of operating the plant under normal conditions should

* In addition to the answers presented here an answer to this question was also submitted by Max Herzog, engineer of tests of the Frisco. Because of its scope Mr. Herzog's answer will be presented in a later issue.

produce re-refined oil at a unit cost slightly in excess of one-half the price of new oil in tank-car lots.

Yearly Volume a Factor

By Ray McBrian
Director of Research, Denver & Rio Grande Western, Denver, Colo.

The reclaiming of lubricating oil where the oil has been removed from a crankcase can be handled by centrifuging alone or by the usual clay, distilling, filtering cycle. In both cases, the initial capital outlay can be under $2,000, with a yearly interest cost of $120. Operating costs consist of clay, filter paper and cloth, and heating. These will run from five to seven cents a gallon.

Labor costs depend on many variables, and if the individual handling the operation performs other tasks, will vary from 1 cent to 20 cents a gallon.

In one operation, where we have the most accurate figures, oil is reclaimed for 16 to 21 cents a gallon. In another operation, a custom reclaimer handles the reclaiming for 17 cents a gallon based on the amount recovered. A normal loss in reclaiming is 14 per cent.

Wherever the yearly volume is over 500 gal, some reclaiming procedure is practical and feasible.

Records on Foundation Piles

What is the value of records of foundation-pile penetration and resistance? How should the data be recorded? What factors, if any, are important in such records? Explain.

Valuable for Several Reasons

By R. R. Cosby
Bridge Engineer, Kansas City Southern, Kansas City, Mo.

The value of records of foundation pile penetration and resistance are several fold. Good and complete records are helpful on many occasions where hazardous conditions might arise or extensions to existing structures are contemplated and occasionally where there is an apparent inadequacy in the pile foundation.

The make, size, type and energy capacity of the pile hammer used are important factors of information. The size, kind and type of piles used should be known. Likewise data on the penetration below cut off and the average penetration the last few blows of the hammer should be available. The cut-off elevation, with reference to some known datum or plane, should also be recorded. If the piling were "landed" or driven to refusal, that, too, is good record information for later guidance.

The record should also indicate whether the foundation piles support a structure subject to stream scour and if scour has developed. Such data are valuable for appraising whether a hazardous situation has developed or might develop.

Circumstances occasionally arise where it is necessary or desirable to materially increase the load on the piles over the original design load. Complete data developed during the driving of the piles are quite helpful as a guide to judgment when such conditions arise.

Not infrequently structures are enlarged or extended in kind and for the same purpose. Accurate information concerning the original piles is of material assistance in determining the design load to be used in the new construction.

Have Many Uses

By R. W. Gustafson
Bridge Engineer, Great Northern, St. Paul, Minn.

Records of foundation-pile penetration and the resistance encountered are very desirable and valuable for reference in connection with future work involving both the structure and other proposed structures in the vicinity. This information is of value in designing the pier foundations for structures to be located in the vicinity of existing structures where the records contain data on the pile driving. In most instances such information would eliminate the necessity for driving test piles for the new structure.

A number of timber bridges are being redriven each year and records of the previous pile driving are of great value in determining the lengths of piles required, and they also give some indication of the soil conditions to be encountered. Where records indicate that difficulty was experienced in getting adequate penetration using timber piles, it can be determined whether or not to use steel piles or some other type of foundation. Records of the penetration of piles supporting concrete piers are very important in helping to determine the stability of the pier in case of extreme scour or any change in the channel bed of the stream.

Complete and accurate records of all foundations and pile penetrations should be noted on the plans for the structure upon completion of the work. Records of the pile driving should show the total penetration, the resistance indicated by the number of blows for the last foot of penetration, and the type of hammer used. They should be kept in the file with the plans, or in some other convenient file for each reference. The records should be readily accessible for information in regard to ordering piles for redriving bridges, designing foundations and estimating pile penetrations for bridges to be constructed in the vicinity of the existing structures, and for bridge inspector's information to determine the actual foundation conditions of various structures where he has noted changes in the ground elevations.

Will Save Time and Expense

By W. A. Genereux
Assistant Engineer, Canadian Pacific, Montreal, Que.

The value of maintaining a record of pile penetration and resistance can be resolved into two parts —penetration and resistance.

A record of penetration is desirable for preparing estimates and material requisitions for replacements, alterations or additions to a structure and may also be of value in the estimating of future adjacent works.

The record of pile resistance is more valuable where soil borings and/or pile loading tests have been made. Much controversy has occurred on the relation between the load capacity of piles and the driving resistance, but it is generally agreed that most dynamic driving

formulae are inaccurate for use in cohesionless material such as sand or gravel.

For cohesive material, such as clay or till, dynamic driving formulas can be very misleading. Therefore, unless the type of soil in which the pile is supported is determined, a resistance record is of little value. However, where soil boring and test loadings are taken, the correlation made between this information and the driving resistance and the penetration will give some assurance that all piles in the structure are driven to their proper capacity.

Having all the pertinent information from previous installations at the site or from nearby sites might save time and expense in undertaking soil tests, and will facilitate the estimating of future works. This data might also be of assistance in designing future works in the immediate area and may result in savings in future foundation costs. Furthermore, complete accurate records would be helpful for assessing an increase in the loading of such structures as bridge piers, etc.

All pertinent data should be recorded on the "as constructed" drawings of the foundation and filed with the soil-boring and test-pile loading plans. Information of this nature would be most useful if it is unnecessary to correlate plans and notes when the occasion arises to refer to it again. For bridge bents and piers, it is generally desirable to summarize as much of this information as convenient in the bridge-record book.

Records of pile penetration and resistance should be complete and concise and should show the material and principal dimensions of the pile; the size and make of hammer, number of blows per minute and energy per blow, double-acting or single-acting, steam or diesel, height of fall, etc.; the average penetration of the pile per blow for at least the last five blows; and the elevation or grade at the tip and cut off. Records should show interruptions to driving. Where helmets, followers or shoes are used, the types should be noted. For any one job, the information required is generally constant but penetration and resistance are items that vary with each pile.

Where records of pile resistance are not kept, the minimum information to be obtained should show the material and dimensions of the pile, and the pile penetration.

Necessity of Spot Tamping

Can the necessity of spot tamping track be eliminated without detrimental effects? What conditions must be established and what methods of maintenance are required to make this possible? Explain.

Must Upgrade Track Structure

By J. B. Farris
Assistant Engineer, Southern,
Cincinnati, Ohio

The necessity of spot tamping can ultimately be eliminated without detrimental effect, and with gratifying financial benefit in many cases, providing that the basic structure of the track, ballast and subgrade is developed so as to support the traffic placed on it.

A fact frequently overlooked is that spot tamping is usually the result of a failure in the ballast material or subgrade, or of non-uniform support developed during the maintenance of the roadbed and ballast section. Correction of the causes of failure can produce a track surface which will not require spot tamping.

Spot tamping itself can set up conditions requiring further spot tamping if the resulting ballast density under the tamped ties is not the same as that under the adjacent ties not tamped.

The primary requisite to free a line from the necessity of spot tamping is a uniformly dense and stable subgrade that will support the loads applied without failure. On new work, the use of modern soil selection and compaction-control technique can produce such a subgrade. On existing lines, which were usually constructed without knowledge of modern soil selection and control methods, it is frequently necessary to stablize certain sections of the roadbed. Out-of-face stablization may be necessary in some areas to obtain the desired results. While current stabilization measures may not produce the desired results at the more critical locations, the continuous search for effective and cheaper methods of stabilization must not be relaxed. The railway industry must remain constantly alert to developments in the field of soil mechanics if they are to take advantage of those developments that are applicable to railway stabilization.

The roadbed must be protected by adequate surface drainage. Subsurface drainage must be carefully designed and installed where necessary. Erosion control features, such as proper protective vegetation, should be incorporated on cut and fill slopes.

Other critical features involved in the elimination of spot tamping are the ballast and sub-ballast sections. The combined depth of these sections must be sufficient to transfer the load from the ties to the subgrade without overstressing the subgrade soil in a water-soaked condition. The gradation, soundness and abrasive resistance of the ballast must be such as to resist deterioration from traffic and weather for the required period between out-of-face surfacings. The density of the ballast must be uniform beneath each tie. The development of a technique that will assure such uniformity in out-of-face surfacing operations is an important feature.

There is much yet to be learned about reducing wear in ballast. It appears that, within certain limits, the gradation of a ballast may be far more critical than abrasion resistance as measured by the Los Angeles Rattler Test. Wear in ballast occurs as a result of a ballast fragment receiving such a load that it breaks into smaller pieces. Such action is simple structural failure. The use of a wider range of gradation, particularly in the finer sizes, may produce a better ballast.

The track structure must be so designed and constructed to adequately support traffic. The use of continuous welded rail to eliminate impact at rail joints should be valuable in locations where ballast wear or subgrade conditions are critical. Continuous welded rail may make possible the reduction of ballast depth on new construction. Engine burns on rails also produce impact loads to increase ballast wear and contribute to the breakdown of critical subgrades.

In general, the condition of

track, timber and ballast must be of a much higher order to eliminate spot tamping than that normally maintained by most lines. The financial return on the investment in upgrading the track structure is usually attractive to a certain point. The complete elimination of spot tamping by upgrading the road may not be immediately feasible on many lines. However, present mechanized maintenance equipment makes possible a gradual upgrading of the road that should eventually eliminate spot tamping.

Weak Spots Dictate Answer

By L. D. Shelkey
Assistant Engineer, Bessemer & Lake Erie, Greenville, Pa.

Since these columns usually present direct answers to the problems set forth, it is assumed that no particular conditions should influence generalities in this instance. The answer to the question in point is "no." However, it is recognized that ideal subgrade characteristics, excellent rail and tie conditions and light tonnage will lend support to an affirmative opinion.

It is generally agreed that it is prudent to raise and tie, out-of-face, all main track in a planned cycle, in order to provide a desirable standard of maintenance. This pattern must consider all track of a given class alike, and, consequently, does not provide any special treatment for recognized weaknesses at particular points. Thus, either repeated spot tamping or some particular treatment has been required at the points having such weaknesses.

At locations where defects exist, the price of the elimination of spot tamping would be rough track, surface-bent rail, shorter tie life, a seemingly shorter cycle of out-of-face raising and general deterioration of the track structure. With an adequate cycle of raising, the track having desirable conditions will require very little spot surfacing, but only a gradual advance may be made toward elimination where weaknesses are present.

Increased use of the several methods of roadbed stabilization will reduce the man-hours required to resurface the bad spots which result from undesirable subgrade conditions.

The replacement of wornout rail, proper joint maintenance (including the use of good joint bars and the restoration of rail surface by welding), the use of welded rail and maintenance of good tie conditions will aid in producing a structure that will remain stable through its cycle.

Finally, no satisfactory approach to the problem is possible unless the track is carefully and adequately tamped when it is raised out-of-face. An excellent job of out-of-face tamping nearly eliminates spot tamping on a stable track structure and roadbed.

Preventing Termite Infestation

What are the most effective methods of preventing termite infestation of buildings? How can such infestation be detected? What methods can be employed to get rid of termites once a building is infested?

Three Preventive Steps

By B. D. Howe
Chief Lumber Inspector, Louisville & Nashville, Louisville, Ky.

Some of the methods which have proved effective in the prevention of termite infestation of buildings are:

(1) The use of treated wood in the substructure.

(2) Properly installed metal termite shields to prevent movement of the termites from the ground to the building.

(3) The poisoning of the soil with an effective poison placed in a trench, of approved size and depth, surrounding the building.

All buildings constructed of wood should be of sufficient height above the ground to provide good ventilation under the building and afford sufficient room for complete inspection to determine whether or not there has been attack by termites.

The greatest damage to wood buildings results from subterranean termites which must maintain contact with the ground for moisture or die. When it is found that a building is infested with these insects, first locate all points of entrance from the ground to the building and then, by the use of metal shields properly installed or by caulking cracks in foundation masonry, provide a barrier between the ground and the building, and thus stop the movement of the insects.

Detection Rather Difficult

By L. P. Drew
Assistant Chief Engineer, Union Pacific, Omaha, Nebr.

The most effective methods of preventing termite infestation are:

(1) Eliminate entirely the use of untreated lumber whether in contact with the ground or close to ground.

(2) If possible, set buildings on concrete foundations at least 12 in above the ground line.

(3) For sills and sub-members use timbers that are fully pressure-treated with either creosote or Penta solutions having sufficient toxicity to prevent termite infestation.

(4) Thoroughly sterilize the soil inside the foundation, and for a distance of at least three feet outside, with an insecticide, particularly in buildings without basements.

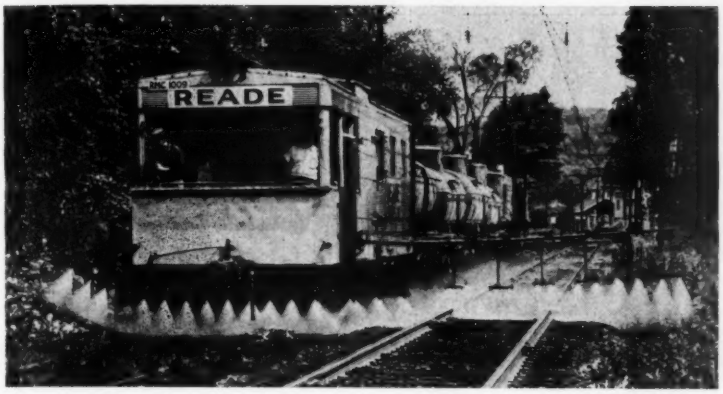
The detection of termite infestation is rather difficult unless one is experienced and can recognize signs, as the termite itself is seldom seen in daylight. In many cases, the termite will enter from the soil surrounding the structure through a mud tunnel which he builds, extending from the ground along the face of a concrete foundation to the nearest untreated wood where he will enter and start his damaging tour. In other cases, air-borne termites will enter, usually at the end of a sawn timber through a small hole which can only be detected by the presence of a fine sawdust produced by the termite as he enters the wood. If termite infestation is suspected it can usually be verified by making test borings.

When it has been definitely determined that termites are present, some firm experienced in termite control or extermination should be called in to fumigate the structure. This is a specialized operation requiring special chemicals and apparatus.

Such firms are usually available in all the larger cities and many of the smaller ones.

In extreme cases it may be necessary to replace all the untreated sills and infested timbers with pressure-treated timbers to remove the damaged wood as well as the source of further damage.

NOW THAT YOUR TRACK IS CLEAN



Here's how You can KEEP IT THAT WAY

A satisfied customer wrote –

"THREE YEARS USING HERBICIDOL AND OUR TRACK IS SO CLEAN THAT WE ARE DISPOSED THIS YEAR TO PASS UP WEED KILLER AND HAVE YOU TURN YOUR ATTENTION TO BRUSH CONTROL WORK."

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WE WILL INSPECT YOUR BRUSH CONDITIONS AND SUBMIT OUR PROPOSAL. THE USE OF CHEMICAL FOR BRUSH CONTROL WILL GIVE YOU THE SAME CUMULATIVE BENEFIT AS OUR WEED CONTROL SERVICE USING HERBICIDOL."

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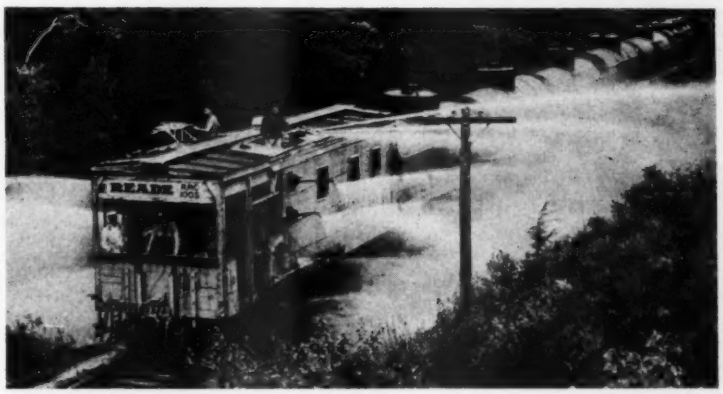

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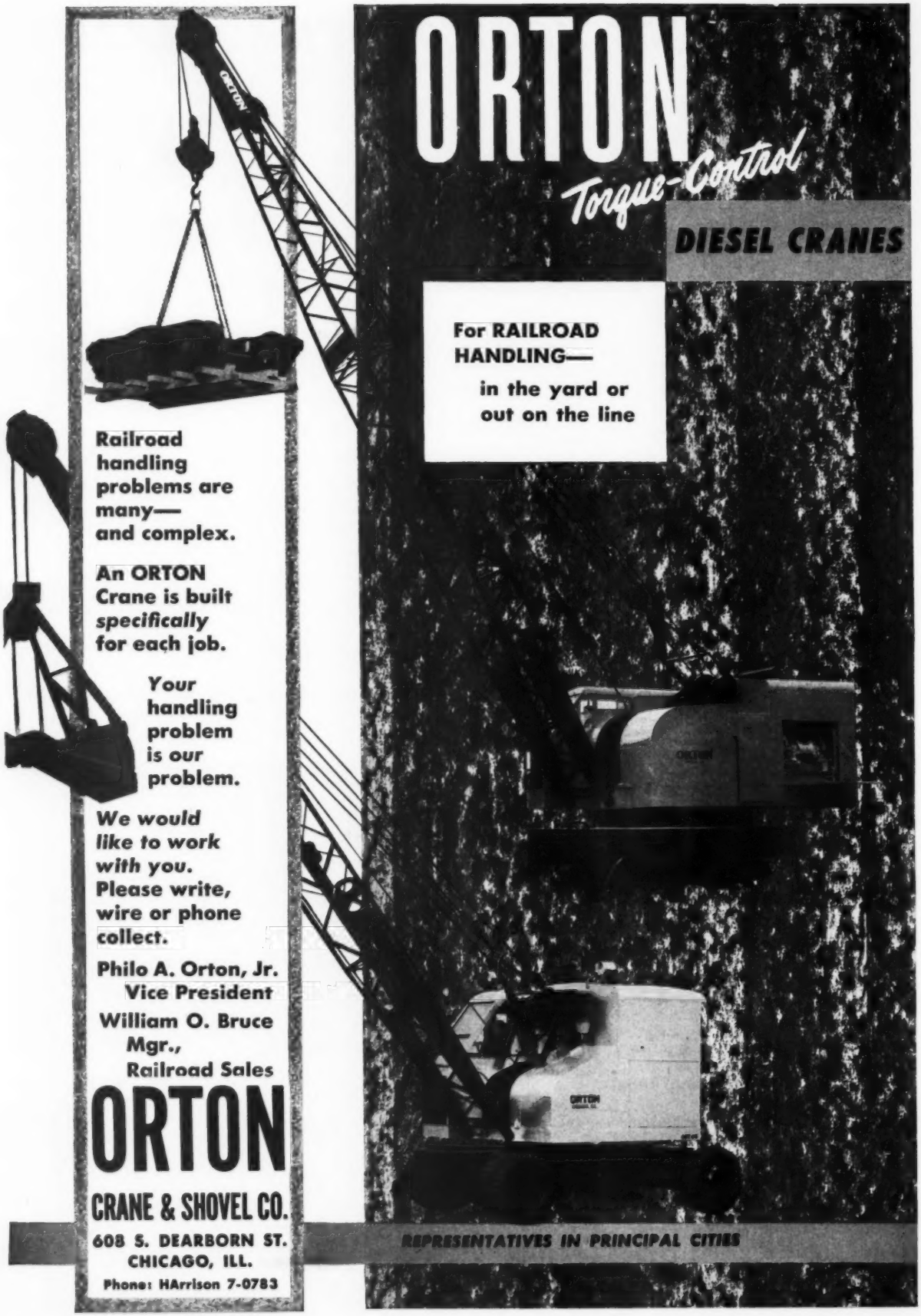
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For RAILROAD HANDLING—
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Railroad handling problems are many— and complex.
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right for rail joints

AREA Track Committee Photo

STANDARD Petrolatum HMP

(High Melting Point)

If you use STANDARD Petrolatum HMP for rail joint lubrication and corrosion protection you get some important benefits. Here are three:

1 Easier track maintenance.

2 Less chance of damage from joint freezing.

3 Longer rail joint life.

This is how STANDARD rail joint lubricants work to give you these benefits: Rail joint bolts are prevented from corroding. Nuts turn easily when joints have to be opened or tightened. Lubricant protects bolts from freezing and shearing in cold weather. Joint bars and rails are protected from wear, their service life is extended.

STANDARD Petrolatum HMP seals joints thoroughly and one application lasts years. The lubricant won't run off in hot weather or freeze up when it's cold. It is not affected by water washing or dissolved by brine dripping from refrigeration cars. It is easy to work with and apply.

Get more information about STANDARD Petrolatum HMP and other Standard Oil maintenance of way lubrication products. Write or call Standard Oil Company, 910 S. Michigan Avenue, Chicago 80, Illinois.

Quick Facts About
STANDARD Petrolatum HMP

- Seals thoroughly
- Unaffected by high or low temperatures
- Won't water wash
- Not affected by brine dripping
- Penetrates and protects rail, joint bar, nut and bolt threads

STANDARD

STANDARD OIL COMPANY
(Indiana)

7 reasons why...

No other crane gives you Tournapull-Crane's revolutionary lift-and-carry operating advantages for all-around load handling and "roustabout" crane service. This completely mobile unit is capable of lifting, carrying and placing heavy loads from any *footing*. With versatility of many interchangeable tools, it has operating and maintenance cost of only *one*. Check these 7 exclusive features, then let us show you proof of Tournapull-Crane's ability to make and save money for you!

1 **Powered mobility**... prime-mover's powerful diesel, torque-proportioning differential, plus flotation of 4 big, low-pressure tires, carry full loads over tracks, yards, pavement, blacktop, soft fill, etc. Travels job-to-job via highway, along right-of-way, or straddling the rails.

2 **Makes 90° turns** left or right, has power-steer plus independent-drive. Gives you accurate, simplified load-placing in restricted areas with minimum maneuvering. No other crane has similar versatility and ease of load handling.

3 **Stability without outriggers** ... safely counter-weighted by entire prime-mover, this crane lifts and carries its rated loads. Tournapull-Cranes can carry loads on short boom and short line with no dangerous swinging. Working off-track, it makes an excellent clean-up tool for derailments, and for many bridge and trestle repairs.

4 **Three-way crane action** ... with or without load, boom can be raised or lowered, extended or retracted ... hoist-block raised or lowered by powerful electric motors operating singly or together for fast, safe spotting. Power-action up-and-down avoids jerking, handles load safely.

5 **Travels, lifts under low overhead** ... will reach into 9'2" doorway with boom lowered. Can work inside shops, warehouses. Can reach inside box-cars to remove heavy loads. Reaches under overhead structures, through low doors, under bridges, through ship gangways. Additional interchangeable booms available for special applications.

6 **Finger-tip control** ... no levers to "fight". Dashboard electric switches control lift and steer, make operation easy and simple. Operators can be trained in a few hours.

7 **Few parts, low maintenance** ... no complicated operating and driving mechanism. Tournapull-Crane operations are controlled by small, compact interchangeable electric motors. Rugged box-beam construction of carriage and boom stands up under extreme loads.

Contact your LeTourneau-Westinghouse Distributor ... he'll be glad to tell you all about Tournapull-Cranes, give you information on interchangeability with other earthmoving and hauling tools, give multi-purpose range of operations, increase savings for you.

Tournapull—Trademark Reg. U.S. Pat. Off. C-1016-RR-x

Tournapull-Cranes are available in three sizes	MODEL D	MODEL C	MODEL B
WHEELBASE	16'	30'	29'3"
HORSEPOWER	138	208	293
MAX. LIFT	10 tons	20 tons	30 tons

LeTourneau-WESTINGHOUSE Company
Railroad Sales Division
Peoria, Illinois
A Subsidiary of Westinghouse Air Brake Company

LEADER TO PROGRESS RPI MEMBER

PRODUCTS OF THE MANUFACTURERS

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- equipment
- materials
- devices

MODEL HL Lining Scope being levelled in "stand-up" position.

NEW LINING AND SURFACING SCOPES

TWO NEW SCOPES, for lining and surfacing track, have recently been made available. The Model CS surfacing scope, designed to give accurate readings of track raises in either spot raising or ballasting operations, is of cast aluminum construction. It permits sighting at heights from 6 to 20 in above the rail. A height scale is graduated in $\frac{1}{16}$-in increments. The telescope may be rotated a full 360 deg and locked in position by tightening a knurled knob. Two permanent magnets are located at either end of the base to provide positive bond. A quick-release arrangement breaks the magnet contact with the rail when the scope is tipped toward the outside of the rail. The instrument is levelled with a rail-web contact screw and can be quickly locked in position. A vernier screw permits accurate height setting. A spring-held trigger on the base allows moving the scope crosshairs up and down $\frac{1}{8}$ in without altering the instrument height setting, to check the horizontal crosshair positioning. The telescope is a 4-power instrument with achromatic

optical system. Base magnets are replaceable.

The Model HL lining scope is equipped with dual 6-power telescopes for lining and back check-sighting. Also of cast aluminum construction, it is adjustable in height from 26 to 58 in, for either "sit-

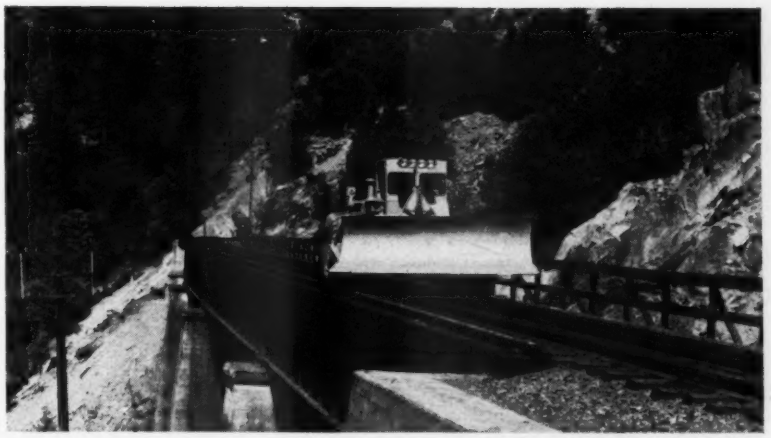
MODEL CS Surfacing Scope in "low-level" position.

down" or "stand-up" use. Weighing 9 lb, it is equipped with a rear view mirror and warning reflectors. The instrument may be levelled in either the standing or sitting position—a feature incorporated in response to railroaders' requests.

Both models are equipped with protective rubber eyepieces and carrying cases. *Brice Hayes Company, Dept. RTS, 7206 W. Everell Ave., Chicago 31, Ill.*

SELF-SEALING FUEL COUPLING

THE self-sealing coupling Model 510022 and 510024 has been developed to eliminate fuel spillage during fueling of diesel locomotives. One half of the coupling is attached to the outlet end of the fueling hose and, during fueling, is coupled to a mating half that is located on the locomotive fuel tank inlet. Fire hazards that have been caused by fuel spillage around



Sure-footed Tournatractor safely crosses trestles and high bridges. Ability to drive along the track is an important advantage . . . sometimes is the only way to reach a job.

Runs to scattered jobs over tracks, pavement, cross-country

Do your scattered earthmoving jobs faster and cheaper with one man and a rubber-tired Tournatractor!

No need to get a work train ready. No time-consuming loading and unloading of equipment. No waiting for dispatchers and a clear track. Operator just hops on and goes—over tracks, pavements, bridges, along right-of-way, or highway. Averages a mile every 3 or 4 minutes.

Once on a job, Tournatractor gets right to work. When dozing, it delivers 2½ yds. every few seconds. It also pulls equipment speedily, uproots trees, brush, cuts slopes, etc. Because of its greater speeds, it will outwork the biggest crawler-tractor on almost every assignment. It has 4-wheel drive, instant gear change with constant-mesh transmission, torque converter, powerful 4-wheel disc-type air brakes, and fast fingertip electric control. It's easy to operate, handy to maneuver, safe and dependable, needs little maintenance. It gets work done fast without delays to rail traffic. And it goes from job to job in a hurry!

Instant-acting 4-wheel air brakes give Tournatractor operator ample margin of safety for working at edge of steep banks. Braking surface totals 2822 sq. in.—4 times as much as on most vehicles. Low-pressure tires do no damage to ties, rails or switches.

For fast, economical right-of-way maintenance on your railroad, check further the rubber-tired advantages of Tournatractor. It's a dependable job-proved product of the earthmoving subsidiary of Westinghouse Air Brake Company.

Tournatractor—Trademark T-643-RR-ZW

LeTourneau-WESTINGHOUSE Company
Railroad Sales Division
Peoria, Illinois
A Subsidiary of Westinghouse Air Brake Company

Santa Fe

road crews move more dirt on rubber

To clean out blow-sand from the right-of-way near a highway overpass 5 miles west of Los Lunas, N.M., the Santa Fe Railroad put a D Tournapull to work.

The rubber-tired "D" was push-loaded by a crawler-tractor. Despite the hard-to-load loose sand and poor footing, the D Tournapull averaged 21 trips per hr. over the 1000′ cycle.

Tournapull is easy to operate in either sand or hardpan. It is highly maneuverable, crosses tracks, travels on roadbed easily. Short turning radius allows the machine to work in tight places.

The "D" loaded in 75 ft., hauled 650 ft., spread on the run in 75 ft., returned via shortcut of 350 feet. Average load was 5 yds. bank measure. Cycle time, 2 minutes, 40 seconds. Production: 105 yds. per 55-minute hour.

Under good conditions the "D" handled 1250 yds. in 8 hrs.

Sand no menace to bearings

In spite of extensive operation in sand, no wheel-bearing repair or replacement has been needed on any of the D Tournapulls currently operating for the Santa Fe. The "D's" have needed practically no maintenance except for regular lubrication since purchase.

You, too, can benefit with modern, high-speed machines that haul more yards per hour. Why not write us now for the new railroad bulletin that gives complete information on D Tournapull applications for your work? We'll be glad to arrange a demonstration.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-923-RR-z

LeTourneau-WESTINGHOUSE Company
Railroad Sales Division
Peoria, Illinois
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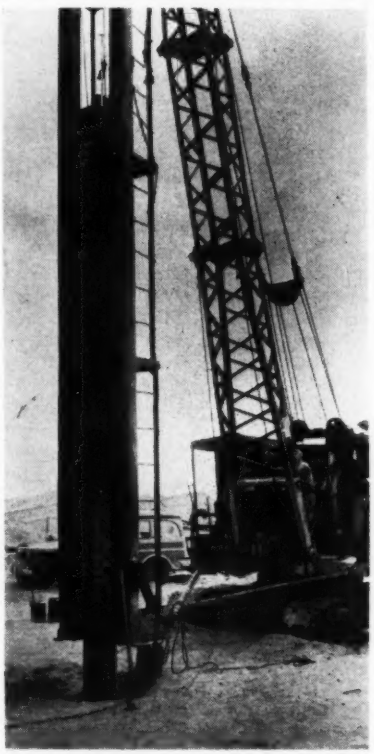
GUARD TO PROTECTION RPI MEMBER

New Products (Cont'd)

service platforms are said to be eliminated with this device since each half of the coupling seals without loss of fuel when disconnected. The manufacturer claims that when this coupling is used, no hand shut-off valve is needed on the fueling hose. The coupling may be combined with a Koehler valve to permit automatic fueling to a desired level, thus preventing fuel losses due to overflow. *Aeroquip Corporation, Dept. RTS, Jackson, Mich.*

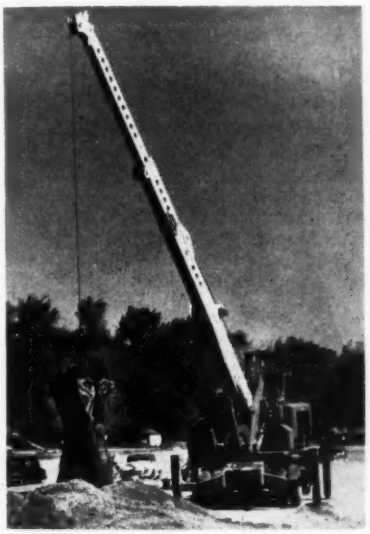


NEW DIESEL PILE HAMMER

THE MODEL DE30—a diesel-powered hammer, equipped with built in fuel and lubricant reservoirs, has recently been developed. A 3000-lb ram delivers 45 to 55 strokes per minute with an average force per blow of 18,000 ft-lb. Tests, conducted by the manufacturer, reportedly have shown that this hammer operates most efficiently with 1- to 2-ton piles at a bearing of from 40 to 90 tons. The hammer is worked by a single load line from a 30- to 35-ton crawler or truck crane. Once started—by lifting the ram—the hammer operates at a speed and stroke determined by the pile resistance; the greater the resistance the longer the stroke and the greater the energy delivered to the pile. During the down stroke the ram actuates a metering pump which delivers liquid fuel into a pocket in the anvil block. When the ram strikes

the block the fuel is atomized by the impact and ignited by the heat of compression of the air caused by the falling ram. The resultant explosive force drives the ram upward and the anvil downward. During the upward travel of the ram, exhaust ports are opened through which the exhaust gases are emitted. When the ram begins to fall, the exhaust ports are closed. The hammer is stopped by pulling a rope which disengages the fuel pump cam. The manufacturer states that sufficient capacity for over three days of economical operation without refilling is provided by the 25-gal fuel tank and 5-gal lubricant tank.

A smaller hammer, the DE 20 with a 2000-lb ram, and a larger Model DE 40—with a 4000-lb ram, are planned for future production, the manufacturer reports. *McKiernan-Terry Corporation, Dept RTS, Dover, N. J.*

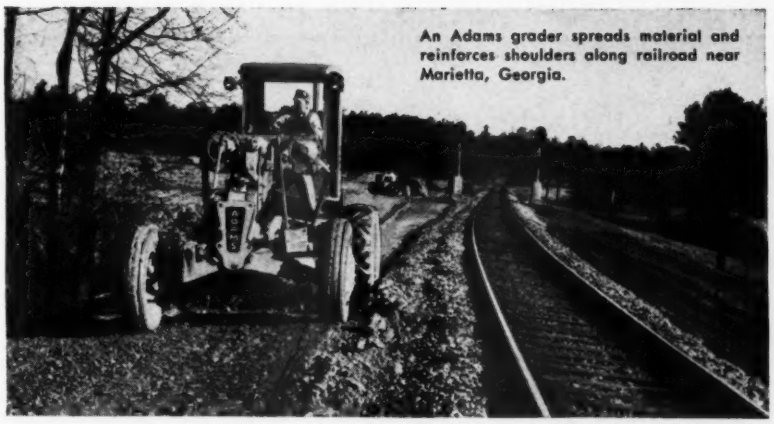


CLAMSHELL IS HYDRAULICALLY OPERATED

A NEW ¾-yd clamshell material-handling bucket is said to operate faster (both closing and opening) because foot-controlled selector valves enable the operator to channel all of the machine's available horsepower into the digging action.

Designed for handling coal, sand, gravel and other bulky material, the bucket has two double-acting hydraulic rams to force the bucket open or closed. The manufacturer claims penetration is greater and payloads larger because the bucket digs with its full weight and no digging effort is lost through the hoisting action. The lower ends of the rams are attached directly to the upper edge of the bowl sections and do not extend into the bucket to cause load interference.

Bowls of this bucket are interchangeable with those of the ½-yd bucket. To assist in picking up loose material, a set of five high-carbon forged teeth can be furnished as extra equipment. *Bucyrus-Erie Company, Dept. RTS, South Wilwaukee, Wis.*



An Adams grader spreads material and reinforces shoulders along railroad near Marietta, Georgia.

How erosion along right-of-way *can be checked CHEAPLY*

Flash floods along your right-of-way can plug drainage ditches, loosen ballast, pile silt on tracks, cause a lot of headaches. Gradual erosion which takes place under scattered showers, melting snows, quick thaws and freezes, and high winds during dry seasons, causes the same trouble in a slower, less spectacular way.

Unless this "creeping paralysis" is stopped before it gets a good start, you face the problems of loose ties, spread rails, track dips, broken bank slopes, and eroded shoulders. Repairs then require the services of heavy on-track equipment, full work crews, and temporary slow-up or tie-up of freight and passenger service.

You can prevent these costly consequences with planned, regular maintenance along your right-of-way. You can do it economically, with one man and a modern Adams motor grader. The Adams is an off-track machine which travels fast to the job, works fast when it gets there. It requires no special transport equipment, will not tie-up revenue traffic, disrupt schedules.

Periodic work with grader prevents costly erosion damage. Here a heavy-duty model grades right-of-way for drainage.

The Adams travels over highways and along your right-of-way at speeds up to 25 mph. It cleans drainage ditches, fills wash-outs, pushes dirt and ballast back on eroded banks, keeps busy at preventative maintenance while troubles are small and erosion repairs are easy to make. Low cost operation permits maintenance on a regular schedule at frequent intervals. Should an emergency occur... an earth slide, cave-in, or wash-out... your motor grader can reach the job quickly, clean it up, and return to its regular patrol duties.

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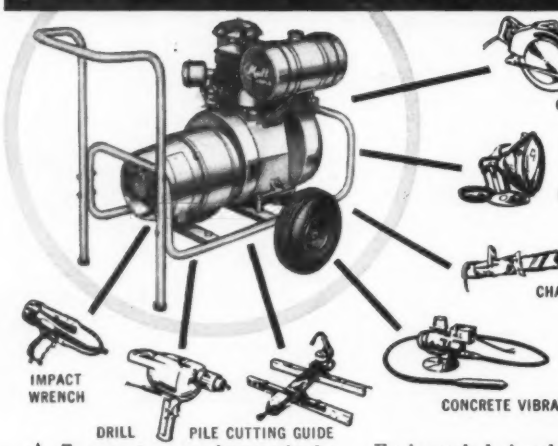

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The Month's News

Railway Personnel

Engineering

E. F. Kidder, division engineer on the Union Pacific at Portland, Ore., retired June 30.

Walter O. Gibson, engineer water service of the Chicago, Burlington & Quincy, with headquarters at Chicago, retired August 1.

Olaf G. Linde, has been appointed assistant division engineer on the Northwestern Pacific with headquarters at San Rafael, Calif., succeeding **T. P. O'Keefe,** who has retired after 47 years of railroad service.

R. V. Gilbert, senior instrumentman on the Burlington's lines east of the Missouri river, has been appointed division engineer at Galesburg, Ill., succeeding **E. L. Kite,** who has retired after 39 years of service.

R. D. Igou has been appointed assistant engineer capital expenditures of the Rock Island, with headquarters at Chicago, succeeding **E. H. Pettibon,** who has been promoted to engineer capital expenditures, succeeding **W. J. Govett,** who has retired.

Wendell Fields, division engineer on the Palestine and San Antonio divisions of the Missouri Pacific, has been promoted to district engineer of the Gulf district at Houston, succeeding **F. S. Schwinn,** retired after 39 years of service. **A. K. McKeithan, Jr.,** assistant division engineer of the DeQuincy division, succeeds Mr. Fields. The position of assistant division engineer on the DeQuincy division has been abolished. **Chester S. Colvin** has been named division engineer of the DeQuincy division, with headquarters at DeQuincy, La. **E. F. Hodnett,** resident engineer at Houston, has been named assistant division engineer of the Palestine and San Antonio divisions, with headquarters at Palestine, Tex., succeeding **S. Beacon** who has retired.

A. W. Herrington, whose promotion to principal engineer of the Pittsburgh & West Virginia was recently announced (*RT&S,* July, p. 48), was born October 7, 1912, at Brownsville, Pa. He attended the Carnegie Institute of Technology and in March 1932 entered the service of the P&WV as secretary to the chief engineer. He was promoted to instrumentman in 1934 and to chief of party in 1940. He was named assistant engineer in 1950—the position he held at the time of his recent promotion.

J. F. Zanolio, valuation engineer on the Denver & Rio Grande Western at Denver, has been appointed locating engineer at that location succeeding **Grant M. Darby,** who has retired. **R. D. Combs,** roadmaster at Denver, has been promoted to division engineer at Salt Lake City,

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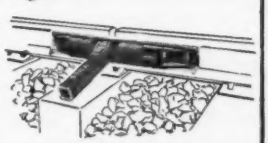

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Railway Personnel (Cont'd)

succeeding **A. C. Black.** Mr. Black has been transferred to Grand Junction, Colo., succeeding **B. S. Converse,** whose appointment as assistant engineer—system on the New York Central was announced in the July issue on page 48.

Frank Simpson King, whose promotion to district engineer on the Pennsylvania at Cleveland was recently announced (*RT&S*, June, p. 68), was born March 17, 1919, at Pewaukee, Wis. He graduated from the University of Wisconsin in 1940 and joined the PRR in January 1942 as an assistant on the engineering corps. He served as assistant supervisor

Frank Simpson King

of track from 1943 until 1947 when he was named supervisor of track at Northumberland, Pa. After serving in that capacity at Mansfield, Ohio, he was promoted to assistant division engineer at Williamsport, Pa., in 1954 He was appointed assistant district engineer, Northern region, at Williamsport in November 1955—the position he held at the time of his recent promotion.

James R. Derieux, whose promotion to assistant chief engineer, maintenance of way and structures, of the Southern at

James R. Derieux

Birmingham, Ala., was recently announced (*RT&S*, July p. 48), was born April 17, 1910, at Knoxville, Tenn. He received his bachelor's degree in civil engineering from the University of Tennessee in 1932, and his master's degree in hydraulics from that school in 1933. He joined the Southern in July 1940 as a rodman at Knoxville, Tenn., and in 1941 was named junior engineer at Cincinnati. In May 1944 he was promoted to assistant engineer at Cincinnati—the position he held at the time of his recent promotion.

J. A. Barnes, whose promotion to assistant to chief engineer for the Chicago & North Western at Chicago, was announced recently (*RT&S*, June, p. 68), was born on May 19, 1921, at Chadron, Neb., and graduated from Iowa State University in 1943 with a BS degree in civil engineering. During the summer vacation periods, Mr. Barnes was employed by the Chicago & North Western as a timekeeper and file clerk and following his graduation, he joined the Pennsylvania as an engineer apprentice for a short time. In August 1946, he

J. A. Barnes

rejoined the Chicago & North Western as an instrumentman and was advanced to assistant engineer in June 1950. He was promoted to division engineer in July 1953, at Huron, S.D., and was transferred to Madison, Wis., in November 1955, which position he held until his recent promotion.

M. B. Hansen, whose promotion to assistant district engineer of the Canadian National at Vancouver, B.C., was announced recently (*RT&S*, June, p. 68), was born on September 24, 1914, at Vancouver, and was graduated from the University of British Columbia in 1940 with a BS degree in civil engineering. He began his railway career with the Canadian National on December 1, 1945, as office engineer at Vancouver and subsequently held positions as instrumentman, assistant engineer and assistant division engineer at various locations on the road. He was advanced to division engineer at The Pas, Man., in September 1952, and was transferred to Vancouver in January 1954. He was holding this latter position at the time of his recent promotion.

J. D. Anderson, whose promotion to assistant engineer of track on the Canadian Pacific at Montreal, Que., was announced recently (*RT&S*, June, p. 68), was born on September 28, 1922, at Prince Rupert, B. C., and graduated from the University of British Columbia in 1945 with a BA degree in science. Mr.

J. D. Anderson

Anderson began his railroad career with the Canadian Pacific on June 1, 1945, as a transitman at Penticton, B. C. In the fall of that year he continued his education and graduated from the University of Washington in 1947 with a MS degree in civil engineering. He returned to the road as a transitman in the summer of 1947 and subsequently held positions as assistant engineer and special engineer. He was advanced to division engineer in 1953 at Winnipeg, Man., which position he held until his recent promotion.

R. M. Bailey, who has been promoted to special engineer on the Canadian National at Winnipeg, Man. (*RT&S*, June, p. 68), was born on April 21, 1924, at Saskatoon, Sask., and graduated from the

R. M. Bailey

University of Saskatchewan in 1950 with a BS degree in civil engineering. Mr. Bailey began his railway service with the Canadian National on November 20, 1946, as a chainman while attending the university. Following his graduation, he was employed full time as a draftsman in the district engineer's office at Vancouver, B. C., and subsequently held positions as assistant engineer and division engineer. He was advanced to assistant district engineer on June 2,

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Here the No. 12 is proving that it is as dependable as it is versatile. Explains Jim Supica, field superintendent for Bennett: "Down time isn't any problem. It stays right in there working when some of the others would fall out."

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99% OF ALL CAT MOTOR GRADERS EVER BUILT ARE STILL ON THE JOB

1955, at Vancouver, which position he held until his recent promotion.

R. J. Kemper, whose promotion to division engineer on the Missouri Pacific at Falls City, Neb., was announced recently (*RT&S,* June, p. 68), was born on November 4, 1924, at Johnston City, Ill., and graduated from the Missouri School of Mines in 1949 with a BS degree in civil engineering. Mr. Kemper began his railroad career with the Missouri Pacific on February 1, 1949, as a rodman at Popular Bluff, Mo., and subsequently held positions as instrumentman and assistant roadmaster. He was advanced to assistant division engineer, Kansas City terminal division, Kansas City, Mo., on January 1, 1954, which position he held until his recent promotion.

Roy L. Harwood, whose promotion to assistant to division engineer on the Illinois Central at Vicksburg, Miss., was recently announced (*RT&S,* July, p. 48), was born September 30, 1918, at Vicksburg, Miss. He attended Louisiana State University and in November 1941 joined the Illinois Central as a chainman. He served as rodman in 1942, assistant supervisor of track from 1943 to 1945, general foreman of track from 1945 to 1946, and assistant supervisor of track in 1947. In the latter year he was named supervisor of track at Mendenhall, Miss., and since 1948 had been supervisor of track at Jackson, Miss.—the position he held at the time of his recent promotion.

Earl F. Hogan, whose promotion to assistant division engineer on the Chesapeake & Ohio at Huntington, W. Va., was recently announced (*RT&S,* July, p. 48), was born May 14, 1922, at Charlottesville, Va. He graduated from the Virginia Military Institute in 1943 and entered the service of the C&O as a chainman in August 1945. He served successively as rodman, instrumentman, assistant engineer, assistant cost engineer, assistant supervisor of track, and supervisor of track. The latter position—to which he was appointed in 1955—he held at the time of his recent promotion.

Victor R. Cooledge, whose promotion to engineer of bridges on the Southern Pacific at San Francisco was recently announced (*RT&S,* July, p. 48), was born September 10, 1895, at DeSmet, S. D. He graduated from Michigan State University in 1917 and entered railroad service with the SP in January 1926 as a draftsman. He advanced through various engineering posts to become engineer of structural design in March 1942. On January 1, 1953, he was promoted to assistant engineer of bridges—the position he held at the time of his recent promotion.

Alsey C. Parker, Jr., whose promotion to engineer maintenance of way on the Atlantic Coast Line at Jacksonville, Fla., was recently announced (*RT&S,* July p. 48), was born February 26, 1926, at Tuscaloosa, Ala. He joined the ACL in July 1950 upon graduation from the University of Alabama. Starting as an instrumentman, he served successively as junior engineer, assistant engineer and senior assistant engineer whereupon, in 1953, he was named roadmaster at Lakeland, Fla. In April 1954 he was promoted to assistant to the engineer maintenance of way at Jacksonville. He was appointed assistant engineer maintenance of way in July 1955—the position he held at the time of his recent promotion.

T. E. Dolphin, assistant engineer on the Canadian National at Winnipeg, Man., has been promoted to assistant division engineer at Port Arthur, Ont., succeeding **D. H. Eckford** who has been promoted to division engineer of the Edson division at Edson, Alta. Mr. Eckford succeeds **W. M. McIntyre** who has been transferred to Regina, Sask., succeeding **W. C. Richardson.** Mr. Richardson has been transferred to the Portage-Brandon division at Winnipeg, Man. **J. J. Pomor,** assistant engineer at Kamloops, B. C., has been promoted to assistant division engineer at Winnipeg.

J. E. Troyer, assistant division engineer, London division, has been named division engineer of the Allandale division with headquarters at Allandale, Ont. He succeeds **R. H. Menary,** who has been transferred. **J. D. Walker,** assistant engineer at London, Ont., has been promoted to division engineer at Capreol,

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Railway Personnel (Cont'd)

Ont., succeeding **H. J. Cherry,** who has been transferred. **J. S. Busby,** assistant division engineer at Cochrane, Ont., has been promoted to division engineer at that location, succeeding **R. L. Gray** who has been transferred.

Track

L. O. Scallions has been named supervisor of track on the Illinois Central at Princeton, Ky., succeeding **R. D. Ennis,** who has retired.

T. C. Herndon has been appointed roadmaster on the Charleston & Western Carolina from McCormick, S. C., to Port Royal, with headquarters at Augusta, Ga.

C. L. Holdaway, E. F. Swope and **D. F. Holt** have been named assistant roadmasters on the Frisco with headquarters at Ft. Smith, Ark., Amory, Miss., and Ft. Scott, Kans., respectively. **R. I. Taylor** has been named assistant roadmaster with headquarters at Tennessee yard.

R. T. Fleshman, section foreman on the Chesapeake & Ohio, has been promoted to supervisor of track at Rainelle, W. Va., succeeding **H. R. Draper,** who has retired after 46 years of service.

Robert F. Ross, transitman on the Boston & Maine, has been promoted to assistant track supervisor at Boston, succeeding **Romeo Lippe,** who has been promoted to track supervisor—construction at Salem, Mass.

John Carey, whose promotion to roadmaster on the Rock Island at Kansas City, Kan., was recently announced (*RT&S,* July, p. 58), was born September 12, 1912, at LaSalle, Ill. He joined the Rock Island March 5, 1930, as a section laborer, was promoted to track foreman in 1938, and to assistant roadmaster in 1949. In 1953 he was promoted to track supervisor—the position he held at the time of his recent promotion.

E. W. Wotipka, track inspector on the Denver & Rio Grande Western at Pueblo, Colo., has been promoted to roadmaster at Salida, Colo., succeeding **G. W. Brenton,** who has been transferred to Denver. Mr. Brenton succeeds **R. D. Combs,** whose appointment to division engineer at Salt Lake City is noted elsewhere in these columns.

John Zadorozny, relief roadmaster on the Canadian National's Port Arthur division, has been promoted to roadmaster on the Allanwater subdivision, east, Port Arthur division, succeeding **R. G. Frederick** who has been transferred to the Quibell subdivision, east, Port Arthur division. Mr. Frederick succeeds **J. L. Tennant** who has been transferred to the Ft. Francis subdivision, west, Port Arthur division, with headquarters at Ft. Francis, Ont.

B. A. Pounders, whose promotion to track supervisor on the Illinois Central at Tutwiler, Miss., was recently announced (*RT&S,* July, p. 60), was born September 5, 1916, at Belmont, Miss. He joined the IC in July 1937 as a track laborer and successively worked as welder, track apprentice, section foreman, extra gang foreman, and general foreman. He held the latter position from August 1955 to June 1, 1956, at which date he was promoted to his present position.

Edgar Hawkins, whose promotion to roadmaster on the Milwaukee Road at Iron Mountain, Mich., was recently announced (*RT&S,* July, p. 58), was born September 26, 1908, at Pottsville, Ill. He joined the Milwaukee in 1926 as a section laborer; two years later he was promoted to section foreman. From 1941 until 1955 he served as extra gang foreman, general foreman and construction roadmaster at several locations on the road. In August of the latter year he was transferred to St. Paul, Minn., as construction roadmaster on the road's hump yard there—the position he held at the time of his recent promotion.

John H. Watts, whose promotion to track supervisor on the Boston & Maine at Salem, Mass., was announced recently (*RT&S,* June, p. 72), was born on March 13, 1924, at Lynn, Mass., and graduated from Northeastern University in 1951 with a BS degree in civil engineering. He began his railway career with the Boston & Maine as a chainman in 1951 and was advanced to structural designer at Boston, Mass., later that same year. He was made student supervisor in April 1952, and subsequently held positions as assistant supervisor bridges and buildings and assistant track supervisor. He was appointed assistant engineer in October 1955, which position he held until his recent promotion.

D. J. Paquette, who has been promoted to supervisor of track on the Illinois Central at Decatur, Ill. (*RT&S,* June, p. 72), was born on May 30, 1918, at Manteno, Ill., and began his railway service with the Illinois Central on April 12, 1938, as a section laborer at Kankakee, Ill. He was advanced to section foreman in May 1942, and entered the armed forces in October 1943, where he served nearly

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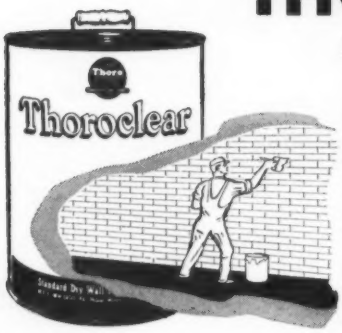

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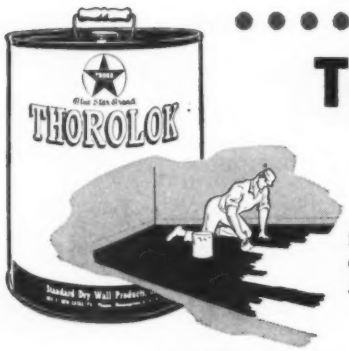

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NEW EAGLE, PENNSYLVANIA

Railway Personnel (Cont'd)

three years. After completing his tour of duty, Mr. Paquette returned to the Illinois Central in 1946 as a track inspector at Kankakee. On December 3, 1950, he re-entered the military service where he served an additional eight months, returning to the road as track inspector in August 1951. He was advanced to assistant to engineer ties and treatment at Chicago, on April 1, 1952, which position he held until his recent promotion.

E. G. Nordan, whose promotion to supervisor of track and structures on the Frisco's subsidiary, the Alabama, Tennessee & Northern, at York, Ala., was announced recently (*RT&S*, June, p. 72), was born on March 4, 1895, at Gilbertown, Ala., and began his railroad career with the Alabama, Tennessee & Northern on June 3, 1913, as a section laborer. He was advanced to section foreman in 1916 and subsequently held positions as extra gang foreman and tie inspector. He was promoted to assistant roadmaster on January 19, 1947, which position he held until his recent promotion.

T. J. Fielder, who has been promoted to roadmaster on the Chicago & North Western at Iron Mountain, Mich. (*RT&S*, June, p. 72), was born on July 8, 1908, at Modale, Iowa, and began his railway career with the Chicago & North Western as a track laborer in 1927. He was promoted to section foreman in 1936 at Missouri Valley, Iowa, and subsequently held positions as surfacing gang foreman, steel gang foreman, track supervisor and assistant roadmaster. In 1955, he was promoted to roadmaster at Ames, Iowa, but was displaced when the position was abolished. He then was made assistant roadmaster at Boone, Iowa, which position he held until his recent promotion.

Bridge & Building

Hilary T. Price has been appointed bridge and building supervisor on the Southern with headquarters at Birmingham, Ala., succeeding **Lloyd C. Crissinger,** who has retired after 46 years of service.

Lawrence B. Boyd has been named acting assistant supervisor of bridges and buildings on the Boston & Maine, succeeding **Frederick A. Ingalls** who has been promoted to resident engineer on the Terminal division with headquarters at Boston.

Special

Van H. Newell, supervisor work equipment on the Southern at Atlanta, Ga., has been promoted to general supervisor work equipment at Knoxville, Tenn., succeeding **W. F. Kohl. George S. Sebastian,** machinist at Charlotte, N. C., has been promoted to supervisor work equipment at that point, replacing **Lyle M. Huff,** who has been transferred to Knoxville replacing **Samuel L. McManus.** Mr. Mc-

(*Continued on page* 64)

WESTERN RAILROAD SUPPLY CO.

Has Purchased the Railroad Supply Business of

BUDA Division of Allis-Chalmers Manufacturing Co.

EXPANSION

WESTERN RAILROAD SUPPLY COMPANY'S new Maintenance-of-Way Division will manufacture and market these widely-known products, formerly supplied by **BUDA** which will be known as:

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WRRS RAILBENDERS
WRRS JACKS—Track, Hydraulic, Screw
WRRS B-W BONDING DRILLS
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Unsurpassed for putting up track of finest uniform quality in all new ballast insertion jobs and regular maintenance out-of-face lifts of track. Initial cost is far less than any other on-track tamper.

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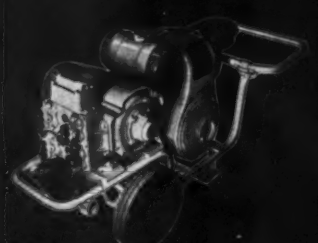
Ideal for low lift and smoothing work with small gangs using 2 and 4 tampers with a Jackson Power Plant. Perfect for tamping the portions of crossings and cross-overs that the on-track tampers do not reach. Excellent for major ballasting operations since any number of these outfits can be grouped for the purpose. Fitted with adjustable handles for maximum convenience of all operators. Available with quickly interchangeable tamping blades which give them unmatched adaptability and efficiency on every type of tamping job.



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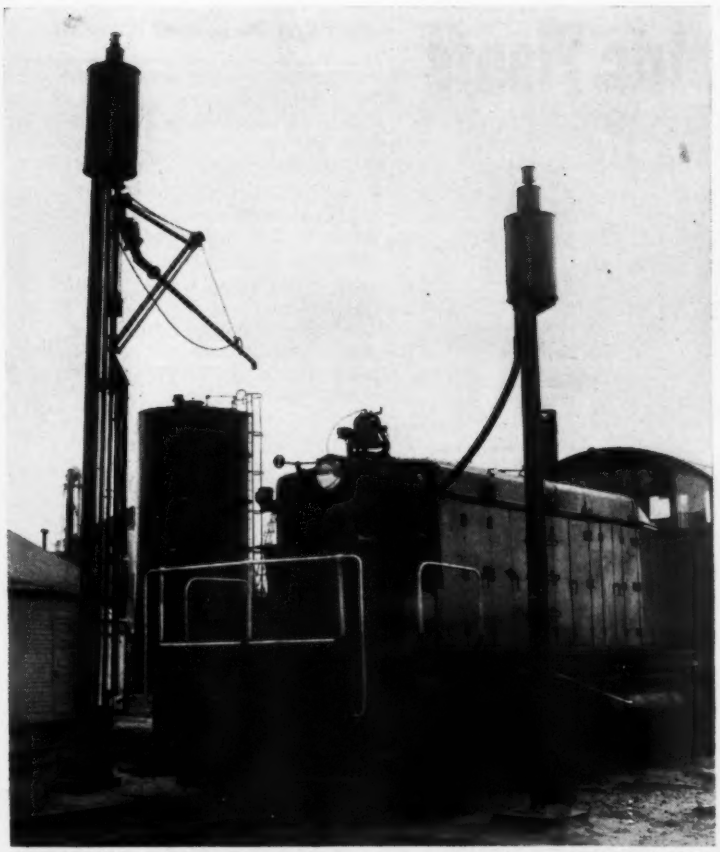

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HEXTEEL heavy duty steel floor armor creates a steel surfaced floor capable of withstanding maximum moving loads. Easily installed with mastic composition or asphalt fill for resurfacing wood decking. Prolongs the life of bridge floors.

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Send us data on your bridge floor and load conditions today! We will reply with estimate for your job.

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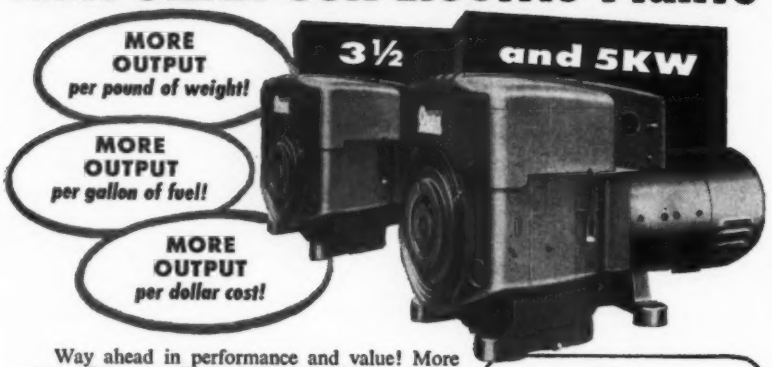
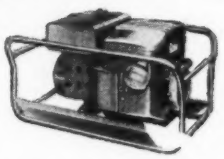
New ONAN CCK Electric Plants



Way ahead in performance and value! More powerful, two-cylinder, air cooled Onan gasoline engines of 4-cycle, horizontally-opposed design give smooth, quieter, effortless performance. Short stroke and moderate speed cut engine wear, give longer life. Quality features include rotating Stellite-faced exhaust valves, solid Stellite valve seat inserts, full pressure lubrication. Onan's exclusive Vacu-Flo cooling system available for difficult or "buried" installations.

Completely Onan-built, with Onan gasoline engines direct-connected to Onan all-climate generators in compact, rugged units. Available in stationary, portable and standby models with a wide range of accessories.



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JOINT BARS

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ANGLE BARS for OLD RAILS

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TRACK SPIKES

Inquiries solicited.

Manufactured by

TREDEGAR COMPANY

RICHMOND II, VIRGINIA

Railway Personnel (Cont'd)

Manus has been transferred to Greenville, S. C., succeeding **C. B. Loflin, Jr.** who has been transferred to Atlanta, replacing Mr. Newell.

R. S. Clark, supervisor of work equipment on the Chesapeake & Ohio at Richmond, Va., has retired after 49 years of service.

L. F. Schrader has been appointed supervisor of maintenance equipment for the Western district of the New York Central with headquarters at Cleveland, succeeding **C. W. Mitchell,** who has been transferred.

Obituary

O. L. Anderson, chief chemist of the Atlantic Coast Line at Jacksonville, Fla., died recently at the age of 70 after 46 years of service in the road's water service department.

W. J. Bergen, retired engineering assistant to the president and former chief engineer of the Nickel Plate, died recently at the age of 84 at Cleveland.

E. R. Murphy, assistant engineer of track on the New York Central with headquarters at New York, died suddenly on May 15.

Association News

Track and B&B Supply Groups Plan "Biggest Exhibit Yet"

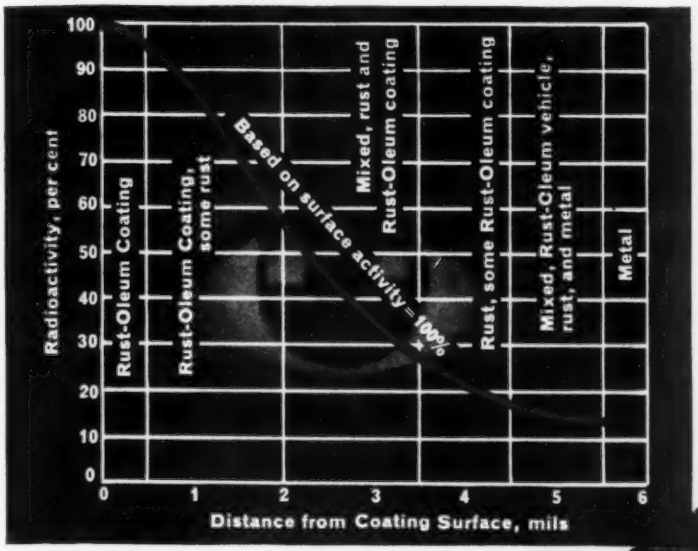
Lewis Thomas, director of exhibits for the Track and Bridge & Building Supply Associations, has revealed that the exhibit to be held this year concurrently with the annual conventions of the American Railway Bridge & Building Association and the Roadmasters' and Maintenance of Way Association will be "the biggest and best yet." A total of 276 exhibition booths have been sold to 113 exhibitors. This is four more booths than were available at the last exhibit in 1953.

Mr. Thomas predicted that some 5,000 persons will attend the exhibit which will run from 9:00 am to 5:00 pm Monday and Tuesday, September 17 and 18, from 9:00 am to 4:00 pm Wednesday, September 19, and from 9:00 am until 12:00 noon on Thursday, September 20. The exhibit will be held, as in past years, at the Coliseum, 1513 S. Wabash Ave., Chicago.

Roadmasters Association; Bridge & Building Association

Plans have practically been completed for the annual conventions of these two associations, to be held at the Conrad Hilton Hotel, Chicago, September 18-20. A general outline of the convention

See Rust-Oleum *penetrate rust* to bare metal through the "Eyes" of Radioactivity!



Curved line illustrates Rust-Oleum penetration through rust at each mil level as recorded by Geiger Counter.

Rust-Oleum dries to a firm, decorative coating that resists salt water, sun, fumes, heat, humidity, and weathering.

Geiger Counter traces Rust-Oleum penetration to bare metal! In nearly three years of radioactive research, Rust-Oleum's *specially-processed* fish oil vehicle was radio-activated and formulated into Rust-Oleum 769 Damp-Proof Red Primer – then applied to rusted test panels. Rust-Oleum's specially-processed fish oil vehicle was then traced through the rust to bare metal by Geiger Counter.

This penetration means rust-stopping power, because the fish oil vehicle works its way into the tiny pits in the metal where it drives out air and moisture that cause rust. Important savings are yours, because Rust-Oleum can be applied directly over sound rusted surfaces – usually eliminating costly surface preparations. Attach coupon to your business letterhead for your copy of the thirty-page report entitled, "The Development of a Method To Determine The Degree of Penetration of a Rust-Oleum Fish-Oil-Based Coating Into Rust On Steel Specimens," prepared by Battelle Memorial Institute technologists.

There is only one Rust-Oleum. It is distinctive as your own fingerprint.

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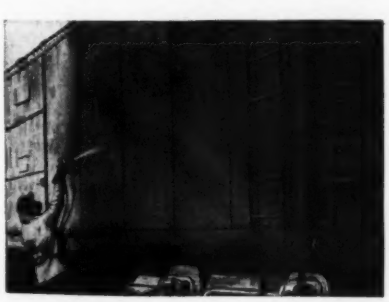

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- ☐ Complete literature with color charts.
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SPEED UP THESE TOUGH JOBS

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Year after year, ever since 1902, Continental engines have been proving their dependability in a steadily-lengthening list of special-purpose machines. Today, no matter what the exact requirement of the job, there's a Red Seal model—gasoline, Diesel, or LPG—engineered and built to meet it down to the last detail—a model with the proper performance characteristics, profile, shape and weight. In the industrial line there are models at closely-spaced levels—from 14 to 240 horsepower. You find them on an almost endless number of operations, speeding the tough jobs and delivering their full work quota, day in and day out, with a minimum of time out for adjustment or repairs.

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Association News (Cont'd)

schedules appears in the "skeleton" program given below.

As usual, the separate sessions of the two associations will consist of the presentation and discussion of reports prepared by special and standing committees. Aside from the committee reports, the Roadmasters' sessions will be featured by an address by R. E. Johnson, vice-president operations, Rock Island, to be delivered Wednesday morning. Another special feature of the Roadmasters sessions, to occur on Thursday morning, will be a panel discussion on a subject of particular interest to track men.

The separate sessions of the Bridge & Building Association, in addition to committee reports, will also include two addresses on subjects to be announced later.

The post-convention moving picture theatre on Thursday afternoon is a new feature. It is designed to take the place of the customary inspection trips that have been held in the past. The films to be exhibited will consist of pictures produced by railroads and will deal with subjects of special interest to both track and bridge and building men. The skeleton program follows:

Monday, September 17

9:00 a.m.-12:00 noon—Registration at Conrad Hilton Hotel
Exhibit open all day at Coliseum

Tuesday, September 18

10:00 a.m.-12:00 noon—Joint Session
Greetings from representatives of other associations
Address by R. J. Stone, vice-president operations, Frisco
Address by J. P. Newell, vice-president, Pennsylvania
2:00 p.m.-4:15 p.m.—Roadmasters' and Bridge & Building Associations will hold separate sessions.

Wednesday, September 19

9:30 a.m.-12:00 noon—Both associations will hold separate sessions
(To allow time for inspecting exhibit no session scheduled for Wednesday afternoon)
6:30 p.m.—Annual banquet with Supply Associations

Thursday, September 20

9:30 a.m.-12:00 noon—Both associations will hold separate sessions
1:30 p.m.-5 p.m.—Post-convention movie theatre, Beverly Room, Conrad Hilton

Supply Trade News

Personnel

The following engineering staff changes have been announced by the **American Hoist & Derrick Co.: J. J. Hite,** chief engineer has been appointed director of engineering of all American Hoist products; **William Niessen,** assistant chief engineer, has been appointed to chief structural engineer; **Kenneth Potter,** assistant

HERE'S THE MACHINE THAT CUTS RIGHT-OF-WAY MAINTENANCE COSTS

HYSTAWAY Excavator-crane is an all-purpose "ONE-MACHINE" Maintenance Section

Railroads all over the country are using the Hystaway to set new low time and cost records on all types of maintenance operations. This combination bulldozer and excavator-crane, able to travel under its own power, **on or off the track,** packs a lot of production into jobs like these:

- **BRIDGE CONSTRUCTION AND REPAIR**
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Equipped with track-walking shoes, the Hystaway travels equally well on or off the track—and gets on or off in a hurry. For full details, call your Caterpillar Dealer. (He is also your Hyster® Dealer). Or write for Catalog 1235 to Hyster Company, 2902-56 N.E. Clackamas St., Portland 8, Oregon; 1802-56 N. Adams St., Peoria 1, Illinois.

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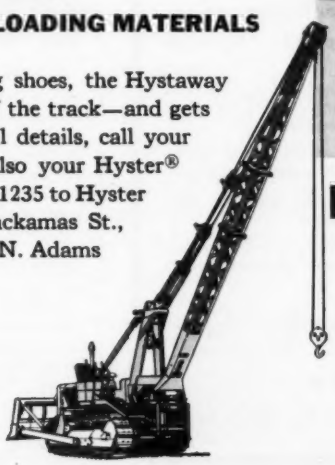

• One-half yard Hystaway can be equipped with all standard front end attachments: Crane, Dragline, Clamshell, Backhoe, Shovel and Pile driver. Designed specifically for Caterpillar* Track-Type Tractors.

HYSTER COMPANY

"Hystaway" for Railroad Construction and Maintenance

HYSTER

chief engineer, has been promoted to chief mechanical engineer; **H. T. Bratt,** supervisor, has been appointed assistant chief engineer in charge of revolver cranes, derricks and hoists; **R. G. Lynn** has been named assistant chief engineer in charge of all electrical applications in American Hoist products; **A. W. Brown,** design engineer, has been named assistant chief engineer in charge of excavators and truck cranes; **Charles Milnar** has been appointed mechanical engineer—locomotive cranes; and, **R. D. Adkins** has been appointed mechanical engineer of the Crosby-Laughlin division.

M. J. Rotroff has been appointed transportation sales manager of the Tractor group of the **Allis-Chalmers Manufacturing Company,** with headquarters at Milwaukee. **K. L. Schultz** and **Dewey W. Lang** have been appointed field transportation sales supervisors. All three men were formerly associated with the Buda Railroad division of Allis-Chalmers at Harvey, Ill.

Paul A. Benoit and **Albert L. Timm** have been appointed field service engineers in the New York division office of the **A. M. Byers Company.**

Burro Cranes are the busiest units on the road because they can work anywhere . . . do virtually anything . . . and do it faster at lower cost. Burro's low overall height and short tail swing permit efficient operation on a flatcar . . . fast travel speeds and powerful draw bar pull give it a wider operating range on the track.

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***Only* BURRO Cranes Give You All These Advantages**

- **Fast travel speeds . . . up to 22 MPH**
- **Draw bar pull of 7500 lbs. (often eliminates need for work train or locomotive)**
- **Elevated Boom Heels for working over high sided gondolas**
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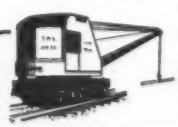
- **Low overall height — Burro can be loaded and worked on a standard flatcar.**



CULLEN-FRIESTEDT CO.
1301 South Kilbourn Avenue • Chicago 23, Ill.

Helps From Manufacturers

The following compilation of literature —including pamphlets and data sheets —is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information, write direct to the manufacturer.

DRAGSCRAPER MACHINES. Catalog A gives full details and specifications on DragScraper machines plus job photos and typical layouts. The 29-page booklet describes rapid-shifting DragScrapers in sizes from ½ to 5 cu yd and covers standard installations from ⅛ to 3 cu yd. (Write: *Sauerman Bros., Inc., Dept. RTS, 632 S. 28th Ave., Bellwood, Ill.*)

TORQUE WRENCH MANUAL. This second edition has been expanded and includes additional torque application formulas. Tables show screw torque data including minimum torsional strength tabulations, torque and tension relationship charts, expalanations and solutions to adapter problems, and complete information covering the general principles of torque wrenches. (Write: *P. A. Sturtevant Company, Dept. RTS, Addition, Ill.*)

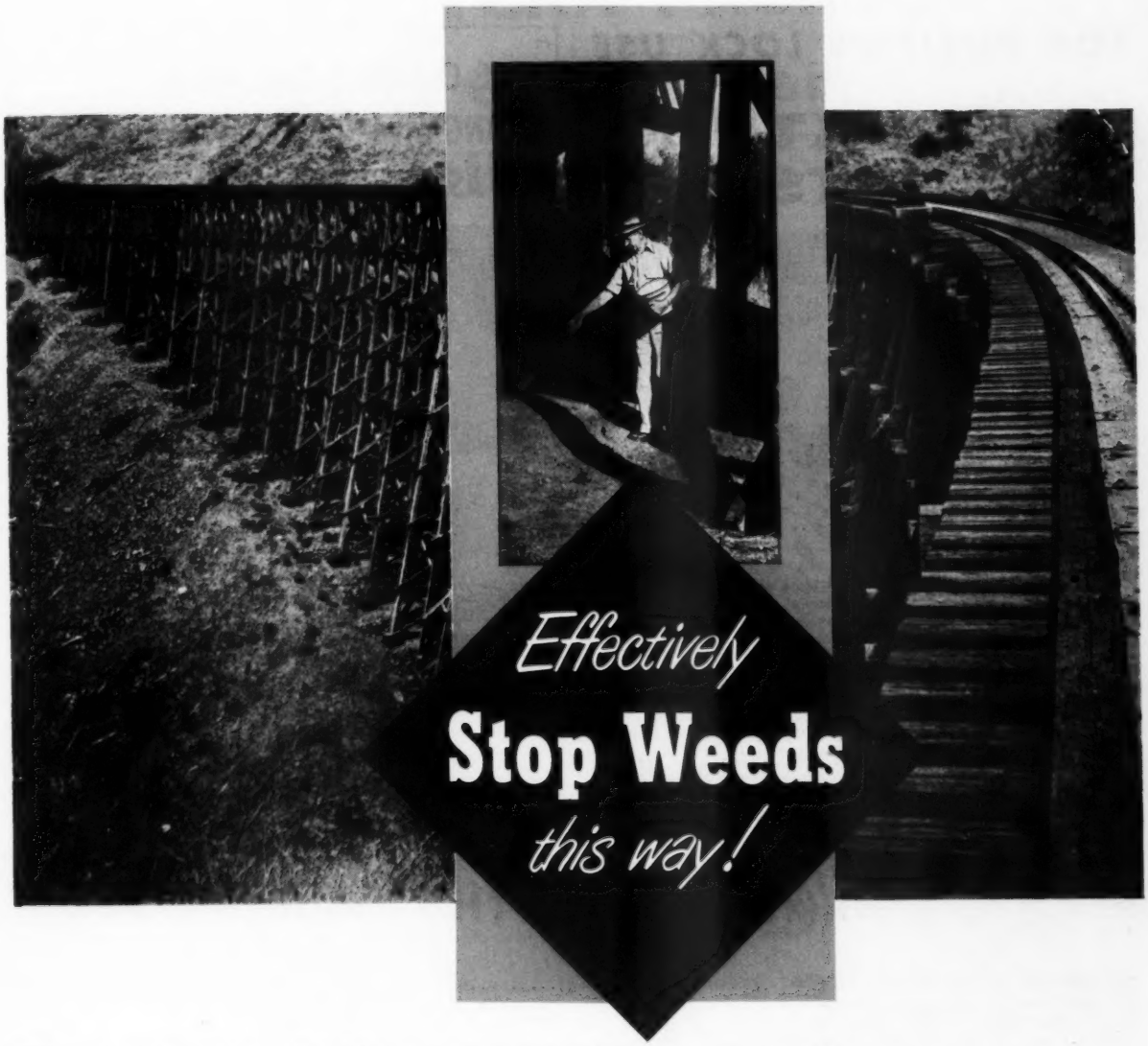
ELECTRIC POWER SETS. 16-page booklet (No. 31922) shows many of the different kinds of uses to which these plants can be put. The booklet is illustrated with pictures of actual installations, cutaway drawings and photographs. The new Caterpillar generators are also shown (Write: *Caterpillar Tractor Company, Dept. RTS, Peoria 8, Ill.*)

CRANES. A new bulletin has been issued presenting an illustrated discussion of crawler and rubber-tire-mounted cranes for use in all types of industrial material handling work. The 4-page, 2-color folder is designated Bulletin K474 and contains specifications and pertinent data on cranes with capacities of from 10 to 95 tons and with boom lengths of 70 and 180 ft. (Write: *Koehring Company, Dept. RTS, Milwaukee 16, Wis.*)

SCRAPERS. The Model 75 Payscraper is described in an 8-page, 2-color folder now available. Listing the features of the new "75", the folder is designated as booklet CR-585-F and contains operational data and specifications. (Write: *International Harvester Company, Dept. RTS, 180 North Michigan Ave., Chicago 1.*)

STEEL BUILDINGS. A 6-page, 2-color folder gives ideas on solving big building problems with rigid-frame type steel buildings—from 1600 sq ft up. The folder, illustrated with drawings and photographs, presents descriptions and specifications. (Write: *Armco Steel Corporation, Dept. RTS, Middletown, Ohio.*)

ASBESTOS SHEET. "J-M Asbestocite," an illustrated six-page folder has been published describing the applications of asbestos-cement sheet material. Complete information is provided on physical properties, sizes, thicknesses and dimensional tolerances. Also included is a section on the cutting, working and application of the material. (Write: *Johns-Manville. Dept. RTS, 22 East 40th Street, New York 16, N. Y.*)



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As a weed killer for areas where bare ground is essential to safety from wildfire, you'll want to do as most roads do... choose Concentrated BORASCU. This weed killer is the most convenient sort... there is nothing to mix; no water to haul. It is readily applied wherever a man can walk... all he needs is a pail and a few sacks of BORASCU. Compare this to weed-cutting and figure the savings.

Part of the savings will, of course, be due to the long-lasting results... from one to two years is not uncommon. And this material is safe! It is not poisonous, flammable, or corrosive to ferrous metals. In addition, the cost is attractively low.

Investigate this dependable weed-and-grass killer and the savings it affords. Write for descriptive literature. Or, if you would like to see actual results on *your* road under your conditions, we'll be happy to make a demonstration without obligation.

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USE Q AND C ONE PIECE MANGANESE GUARD RAILS TO ASSURE SAFETY AND ECONOMY

The design and rugged construction of The Q and C One-Piece Guard Rail assure strength, safety, durability and economy. They are easy to install and a minimum of maintenance is required, resulting in reduced costs.

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WESTERN PACIFIC uses CAT* power to police Feather River Canyon

Feather River Canyon, stretching for 114 miles northeast of Oroville, California, is breathtaking scenery to Western Pacific's "Vista Dome" passengers. But it's a maintenance problem to the railroad, which keeps a Caterpillar-powered Insley Rubber-Mounted Shovel in the area constantly.

Year-around maintenance is necessary to prevent snow-slides in winter and dirt slides during the rest of the year. Western Pacific needs dependable power in its off-track equipment in the remote area. So it selected a Cat D311 Engine for the shovel.

This 4-cycle engine, like all Caterpillar Diesels, is built for rough-and-ready railroad jobs. It's designed to give you maximum output with minimum down time. There are no complicated operating adjustments. And each Caterpillar Diesel can be tailored to your specific application. There is a wide choice of engines up to 650 HP (maximum). You now are offered torque converter drive, fluid couplings, or direct drive, arranged in the way which helps you do the job best.

There has been a continual parade of engine and electric set improvements coming from Caterpillar. All new Cat Engines now are offered with a choice of three starting systems — air, electric or gasoline. Horsepower has been increased in many models.

And, best of all, you have no parts inventory to carry. Your nearby Caterpillar Dealer stocks the parts for you, freeing your capital for other uses. Next time you purchase new equipment or repower old, specify Caterpillar Diesels. All leading manufacturers can provide them.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

MODERN RAILROAD DIESEL POWER

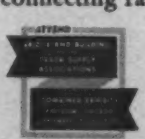
New Machine Unloads a car of 400 ties in 45 minutes

RMC

TIE UNLOADER

While moving on rails through modified flat cars, machine unloads ties one at a time to the exact spot desired.

Ties can be placed close to the rail or up to six feet away, on either side of the car. Machine passes through a series of drop-end cars, using short connecting rails.

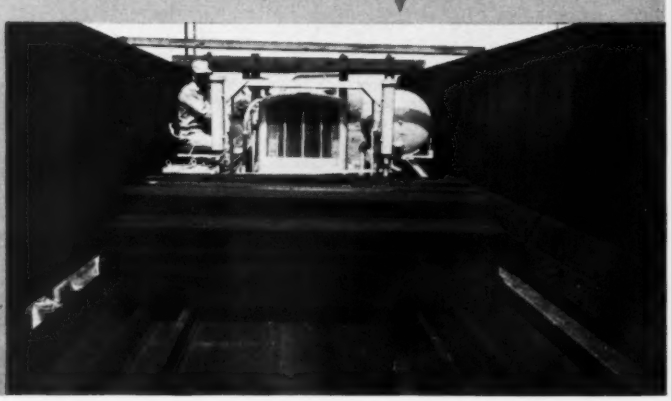
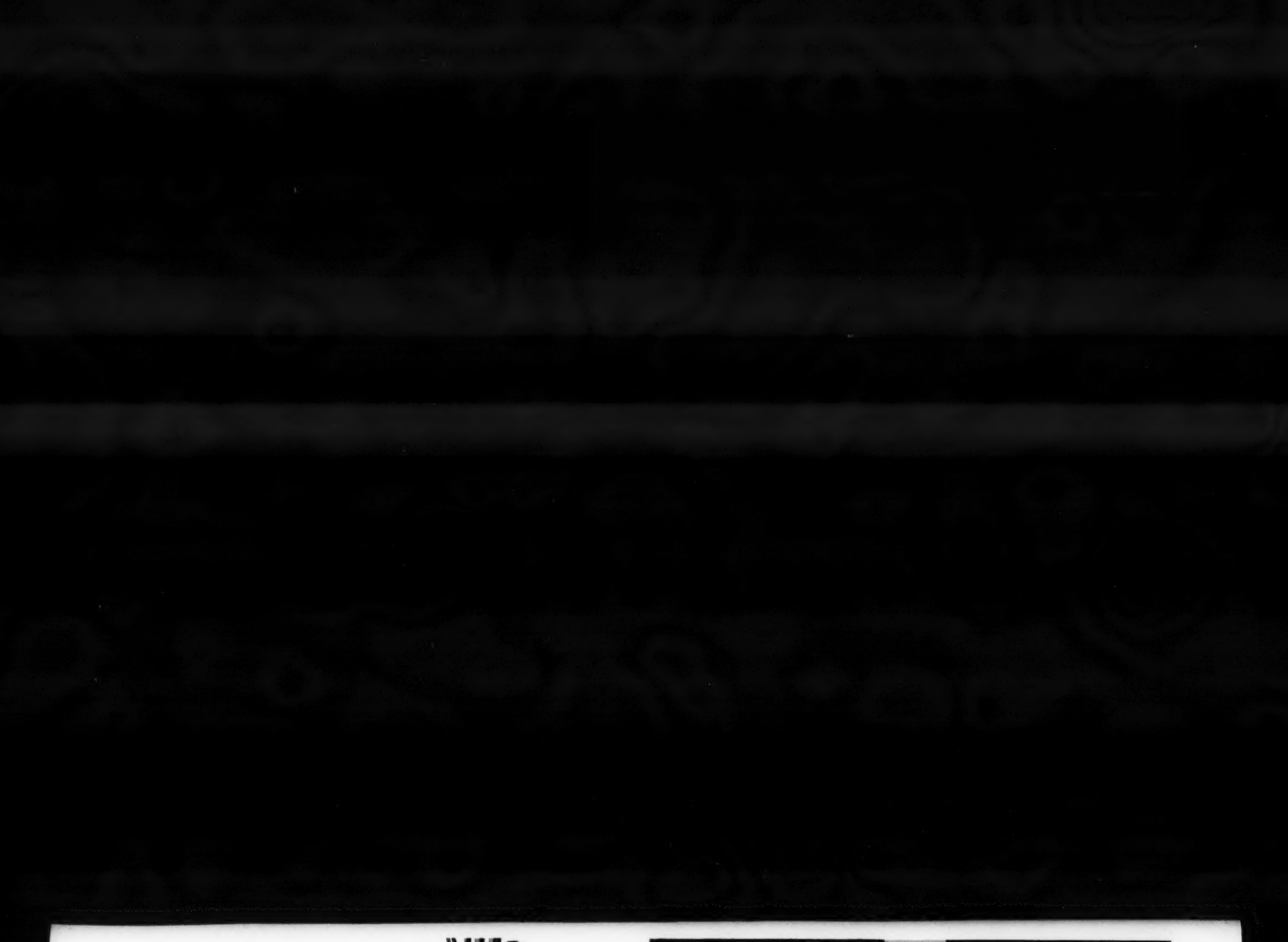


Tie Unloader eliminates a considerable safety hazard, since ties are neither loaded nor unloaded by hand.

Write for details

Railway Maintenance Corporation

PITTSBURGH 30, PA.

▲ Since ties are unloaded from bottom of the car, they are positioned more accurately than by conventional methods.

Ties are loaded crossways and require no special stacking. ▼